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ELECTRONIC COMMERCE: LEGAL CONSIDERATIONS

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INTRODUCTION

1. The past few years have witnessed a revolution in electronic communication technology. The rapid development of electronic data interchange (EDI), electronic mail and the Internet are radically affecting the way trade transactions are being conducted. More and more EDI and other electronic means of communication are replacing paper documents. There were about 100,000 users of EDI operating to national and international standards in 1995, and it is estimated that the number has been increasing by about 25 per cent every year. 1/ There are over 50 countries in the process of transition from paper-based documentation to the EDI trade facilitation system. 2/

2. Until recently, electronic commerce was confined to a business-to-business activity on closed proprietary networks, but it is "now rapidly expanding into a complex web of commercial activities transacted on a global scale between an ever-increasing number of participants, corporate and individual, known and unknown, on global open networks such as the Internet". 3/

3. Electronic means of communication present new business opportunities as well as challenges. Accommodating the fast-moving electronic commerce, in terms of both legal and technological structure, is a challenge for all those involved. In order to enable traders to benefit to the maximum extent from the opportunities offered by electronic commerce, there is a need for an appropriate legal basis.

4. The new emerging technological innovations, however, have not yet been accommodated in domestic laws or international legislation. The existing laws, based on paper documents, do not facilitate or promote electronic commerce. On the contrary, the requirements under certain national laws or international conventions, applicable to international trade transactions, for "written", "original" or "manual signature" create serious obstacles to the use of electronic means of communication in international trade. The international community and national authorities are gradually working towards creating a legal environment appropriate to electronic trading. Some countries have adopted, or are in the process of preparing, legislation

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1/ R. Schware and P. Kimberley, "Information Technology and National Trade Facilitation", World Bank Technical Paper No. 317, World Bank, Washington D.C., 1995, p. 19.

2/ Ibid., No. 316, p. 17.

3/ See "A European Initiative in Electronic Commerce", http://www.ispo.cec.be/Ecommerce, April 1997.

covering certain aspects of electronic commerce. International instruments adopted in recent years contemplate the use of alternatives to paper-based methods of communication. 4/

5. The survey conducted by the United Nations Economic Commission for Europe (ECE), however, confirmed that on the whole the current rules concerning international trade transactions did not satisfactorily accommodate the reality of EDI and electronic trading, as in many instances EDI messages remained potentially unacceptable as legal means of communication. 5/ Thus, there is a need for an overall legislative framework to remove the existing legal impediments to the use of electronic means of communications in international trade.

6. A number of developments are taking place, at the national and international level, to make electronic trading a reality. 6/ More and more major trading companies are using electronic means of communication. Traders from developing countries are under pressure to adopt the new trading patterns. As the World Bank report concluded:

> "Already some organizations will only accept new suppliers if they can demonstrate an EDI capability. There are cases of companies, particularly traditional, small, older firms, who have gone out of business because of inability, or unwillingness to comply or disbelief in the need to comply. This has been particularly true of some middlemen occupations.
>
> Ultimately there is an even harder fact to consider. There is no longer any choice about compliance; the market has made the decision for everyone. The remaining choices involve timing, to a diminishing extent, and the level of participation. It may be possible to adopt a cosmetic approach, or minimum level compliance. But that represents considerable pain for limited, and transient gain. Market conditions will, in time, demand maximum participation and the adoption of best practice for survival. At the moment there are still opportunities for competitive advantage." 7/

4/ See the United Nations Convention on Contracts for Sale of Goods, 1980, article 11, and the United Nations Convention on the Liability of Operators of Transport Terminals in International Trade, 1991, article 4, paragraphs (3) and (4), and article 1, paragraphs (e) and (f).

5/ See, "Legal Aspects of Trade Data Interchange: Review of Definitions of 'Writing', 'Signature' and 'Document' Employed in Multilateral Conventions and Agreements Relating to International Trade", TRADE/WP.4/R.1096, 1994, paragraph 1.6.

6/ See chapter I.

7/ Schware and Kimberley, op. cit., No. 317, p. 19.

7. A number of developing countries have already launched a programme for accommodating electronic commerce. As far as legislative reforms are concerned, however, there have been very few developments. 8/ It is suggested that developing countries begin to take stock of their existing laws and regulations, and consider enacting legislation which would promote electronic commerce. Unless they take appropriate legislative measures to accommodate electronic commerce, they run the risk of being excluded from participation in international trade in the future.

8. The subject of electronic commerce has been debated on a number of occasions within UNCTAD. The Expert Meeting on Telecommunications, Business Facilitation and Trade Efficiency, having stressed the need for further examination of the issues related to electronic commerce and the importance of an appropriate legal framework, recommended the convening of an expert meeting on the legal dimensions of electronic commerce. 9/ In December 1997 the General Assembly of the United Nations, taking note of the increasing importance and application of electronic commerce in international trade, urged UNCTAD, in cooperation with other relevant parts of the United Nations system, to assist developing countries, particularly the least developed countries, and in this regard, also noted the needs of the countries in transition. 10/

9. The present study is not intended to provide a comprehensive account of all legal issues relevant to electronic commerce. It focuses only on issues directly affecting international trade. It is prepared with the aim of creating awareness and assisting developing countries in their efforts to accommodate electronic trading. It gives an account of recent international developments aimed at facilitating electronic commerce, and reviews legal issues which are considered to constitute impediments to the use of electronic means of communication in international trade, with an analysis of the solutions provided in the UNCITRAL Model Law on Electronic Commerce and other existing legal texts. In addition, it includes a number of suggestions and proposals for consideration by Governments and commercial parties.

8/ In the Republic of Korea, the Act on Promotion of Business Automation was passed in 1991 (Law No. 4479 of 31 December). See ECE document TRADE/WP.4/R.872. See also the Colombian Draft Law on Electronic Commerce and Digital Signatures, September 1997, and the Malaysian Digital Signature Bill, 1997.

9/ See the Report of the Expert Meeting on Telecommunications, Business Facilitation and Trade Efficiency, TD/B/Com.3/7, October 1997, para. 7.

10/ See General Assembly resolution 52/182, para. 8.

Chapter I

INTERNATIONAL EFFORTS TOWARDS FACILITATION OF ELECTRONIC COMMERCE

A. UNCITRAL Model Law on Electronic Commerce

10. The United Nations Commission on International Trade Law (UNCITRAL), as the body within the United Nations system responsible for promoting the harmonization and unification of international trade law, undertook major work on legal aspects of electronic commerce, leading to the adoption of the Model Law on Electronic Commerce (hereinafter referred to as the Model Law) in June 1996. The main objective of the Model Law is to facilitate electronic trading by providing a set of internationally acceptable rules which can be used by States in enacting legislation to overcome legal obstacles and uncertainties which may exist in relation to the use of electronic means of communication in international trade. It also provides guidelines to individual traders, when preparing their contractual agreements, for removing some of the legal barriers to electronic trading. 11/

11. The increased use of electronic means of communication, such as electronic data interchange (EDI), electronic mail and the Internet, has raised concerns about their legal effect, validity and enforceability. In most countries the existing national laws do not contemplate the use of modern means of communication. There are national and international laws which impose restrictions on the use of electronic communication techniques by requiring "written", "signed" or "original" documents. Enacting legislation on the basis of the Model Law would remove a number of these restrictions.

12. The Model Law is accompanied by a "Guide to Enactment", which aims at assisting legislators and users of electronic means of communication by providing explanation and clarification as to the meaning and intent of the provisions of the Model Law. Furthermore, a number of issues not covered by the Model Law are addressed in the Guide so as to provide guidance to enacting States. 12/

13. Although the title of the Model Law refers to electronic commerce, no definition of the term is provided in the text. Article 2 (b), on the other hand, defines EDI. Indeed, until a very late stage in its preparation the title of the draft Model Law referred to "Legal Aspects of the Electronic Data Interchange (EDI) and Related Means of Communication". Use of the term "electronic commerce" was considered the most appropriate way to describe the broad range of communication techniques covered by the Model Law. The term is used to include any electronic means of communication such as EDI, i.e. the

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11/ With regard to the objective of the Model Law, see the UNCITRAL Model Law on Electronic Commerce with Guide to Enactment, 1996, paras. 2-6.

12/ See the Guide to Enactment of the UNCITRAL Model Law on Electronic Commerce, 1996, para. 1.

computer-to-computer transmission of data in a standard format, electronic mail, the Internet, as well as less sophisticated techniques of telecopy and fax. 13/

14. Article 1 of the Model Law, dealing with the scope of application, states that it "applies to any kind of information in the form of a data message used in the context of commercial activities". The definition of "data message" in article 2 (a) makes it clear that any information generated, sent, received or stored by electronic, optical or similar means, including, but not restricted to, EDI, electronic mail, telegram, telex or telecopy, is included. Alternative texts are provided for States that might wish to limit the application of the Model Law to "international data messages" or to extend its applicability beyond the scope of commercial activities. Also, it is suggested that the word "commercial" in article 1 should be given a wide interpretation to cover matters arising from all relationships of a commercial nature, whether contractual or otherwise. 14/

15. The Model Law comprises two parts. Part one covers provisions applicable to electronic commerce in general and part two deals with specific areas of electronic commerce.

16. Chapter II of the general provisions of the Model Law sets out the application of legal requirements to data messages. It includes what may be regarded as the key elements required in order to give data messages the same status as paper documents. Article 5 clearly sets out the fundamental principle that the validity and enforceability of information must not be denied simply because it is provided in the form of a data message. 15/ It does not, however, interfere with the substance or legal effect of the information itself but merely states that the form in which information is provided should not result in denial of its validity. The purpose of the article is to overcome problems arising from requirements under certain national laws, such as the requirement for "writing" or an "original". 16/

17. Articles 6, 7 and 8 set out requirements which a data message should meet in order to be treated as "writing", "signature" and "original". In other words, they do not attempt to extend definitions of those terms to include the concept of electronic communications; instead, they adopt what is called a "functional equivalent" approach. That is to say, they identify the purposes and functions of paper-based-form requirements with a view to determining the

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13/ See the Report of the United Nations Commission on International Trade Law on its twenty-ninth session, 28 May-14 June 1996, Official Records of the General Assembly, Fifty-first Session, Supplement No. 17 (A/51/17), paras. 174-177; see also Guide to Enactment of the Model Law, paras. 7-8.

14/ See footnotes to article 1.

15/ Article 5 provides that "Information shall not be denied legal effect, validity or enforceability solely on the grounds that it is in the form of a data message".

16/ See Guide to Enactment of the Model Law, para. 46.

criteria which a data message must meet in order to be given the same legal recognition as a paper document. 17/ These provisions are essential for removing some of the main obstacles to the development of electronic trading as a result of legal requirements for the use of traditional paper-based documentation. Provisions dealing with the admissibility of data messages as evidence in legal proceedings and their evidential value, as well as provisions regarding the storage of data messages, are set out in articles 9 and 10.

18. Chapter III includes provisions of a type often found in trading partner agreements. They deal with issues such as formation and validity of contracts, recognition and validity of data messages as between the parties, attribution of data messages, acknowledgement of receipt, and time and place of dispatch and receipt of data messages. These provisions are to apply in cases where trading parties have omitted to address such issues in their communication agreement; alternatively, they may be used for the preparation of such agreements, or in the absence of a communication agreement, such as for communication in an open network. 18/ The parties are therefore permitted to modify the provisions of chapter III between themselves, provided that they do not affect rights and obligations of third parties. 19/

19. Part two of the Model Law, dealing with electronic commerce in specific areas, currently includes only one chapter covering carriage of goods. It is expected that in future other chapters may be added to deal with other areas. The adoption of specific provisions for carriage of goods is not intended to exclude the application of the remaining provisions of the Model Law to transport documents. Articles 16 and 17 contain provisions aimed at overcoming problems and uncertainties arising from the replacement of transport documents by electronic equivalents and from transfer of rights in goods through negotiable bills of lading.

20. Article 16 sets out the range of activities to which the provisions of the chapter are to apply. It includes a non-exhaustive list of actions expected to be carried out in the context of carriage of goods, such as furnishing marks, number, quantity or condition of goods, delivery, notice of loss or damage to goods, transferring or negotiating rights in goods, or acquiring or transferring rights and obligations under the contract. Article 17 sets out functional equivalents of paper documents in relation to actions listed in article 16, and the functional equivalent of transfer of rights and title to goods through communication of data messages. 20/

21. In this context the crucial issue has been to establish the identity of the exclusive holder or the uniqueness of the message to be relied on in delivering the goods, so as to ensure that a right is transferred to one

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17/ Ibid., paras. 15-18.

18/ Ibid., paras. 19-21.

19/ See article 4.

20/ See article 17 (1) and (2).

person only. The requirement of uniqueness of the message is therefore made a precondition for transfer of rights by means of a data message. 21/ Provisions are made to avoid duplication by ensuring that transfer of rights and obligations or title to goods is not conducted through the use of both data messages and paper documents simultaneously. In other words, where data messages are used to effect any such action, no paper document used for the same purpose is valid unless the use of data messages has been terminated, and replaced by the use of paper documents. 22/ Finally, provisions are also included to ensure that compulsory application of certain laws to contracts for carriage of goods by sea, such as the Hague, Hague-Visby or Hamburg Rules, is not excluded by the fact that data messages are used instead of paper bills of lading. 23/

22. The provisions of articles 16 and 17 apply to all modes of transport, including road, rail, air, sea and multimodal transport, and to all transport documents, whether negotiable or non-negotiable.

23. One of the main objectives of the Model Law is "to facilitate the use of modern communication techniques and to provide certainty with the use of such techniques where obstacles or uncertainty resulting from statutory provisions could not be avoided by contractual stipulations". 24/ It does not, however, provide a comprehensive set of rules covering every aspect of the use of electronic means of communication. It is considered a "framework" law requiring additional procedural rules and regulations necessary for implementing such communication techniques in enacting States. 25/

B. Interchange agreements

24. In the absence of a specific regulatory framework governing EDI-based transactions, "interchange agreements" or "trading partner agreements" have been developed to overcome uncertainties arising from the existing laws/legislation regarding the use of EDI. Interchange agreements are contractual arrangements aimed at addressing a number of legal and technical issues associated with the use of EDI between the trading partners, including the role and responsibilities of the respective parties.

25. A number of national trade facilitation bodies, bar associations, and regional and international organizations have been engaged in preparing model interchange agreements. Some of these agreements are designed to be used purely at the national level and often reflect the relevant national legal system. Similarly, regional agreements are prepared with a view to responding to the particular legal requirements of the region concerned.

21/ See article 17 (3) and (4).

22/ See article 17 (5).

23/ See article 17 (6).

24/ See Guide to Enactment of the Model Law, para. 21.

25/ Ibid., para. 13.

26. The first international attempt to harmonize EDI practices was the preparation of the Uniform Rules of Conduct for Interchange of Trade Data by Teletransmission (UNCID) in 1987 under the auspices of the International Chamber of Commerce (ICC). 26/ The UNCID Rules were prepared by a Joint Special Committee of the ICC with the participation of a number of interested organizations such as UNCITRAL, UNCTAD, the United Nations Economic Commission for Europe (ECE), the Organisation for Economic Co-operation and Development (OECD), the International Organization for Standardization (ISO), the Customs Co-operation Council (now the World Customs Organization), the Commission of the European Communities, the Organization for Data Exchange by Tele Transmission in Europe (ODETTE) and the European Insurance Committee.

27. The UNCID Rules established an agreed Code of Conduct which the parties may choose to apply to their EDI relationship. They are not meant to serve as a model interchange agreement, and they expressly provide that they do not apply to the substance of trade data transfers. 27/ They have a limited scope, including provisions requiring the parties to ensure transfer, and capability to receive, correct and complete messages; identification of the parties; acknowledgement of receipt, if required; confirmation of the contents of the message; and protection of trade data and logging and storage of data.

28. The drawing up of the UNCID Rules, however, was an important step for the development of a legal framework for EDI communications. The introductory note recognizes the need for further communication agreements and outlines the following elements that should be considered in addition to the UNCID Rules when formulating an agreement:

> "1. There is always a risk that something may go wrong - who should carry the risk? Should each party carry its own or would it seem possible to link risk to insurance or to the network operator?
>
> 2. If damage is caused by a party failing to observe the rules, what should be the consequences? This is partly a question of limitation of liability. It also has a bearing on the situation of third parties.
>
> 3. Should the rules on risk and liability be covered by rules on insurance?
>
> 4. Should there be rules on timing, e.g. the time within which the receivers should process the data, etc.?
>
> 5. Should there be rules on secrecy or other rules regarding the substance of the data exchanged?
>
> 6. Should there be rules of a professional nature such as the banking rules contained in SWIFT?

26/ See ICC publication No. 452, 1988.

27/ Article 1.

7. Should there be rules on encryption or other security measures?

8. Should there be rules on 'signatures'?

It would also seem important to have rules on applicable law and dispute resolution."

29. A number of model interchange agreements and guidelines have been prepared since the publication of the UNCID Rules - for example, the Standard EDI Agreements prepared by the EDI Associations of the United Kingdom and New Zealand; Model EDI Agreements prepared by the EDI Council of Australia and the Centre International de Recherches et d'Etude du Droit de l'Informatique et des Télécommunications (CIREDIT) in France; EDI Trading Partner Agreements prepared by the EDI Council of Canada; the Model EDI Trading Partner Agreement prepared by the American Bar Association (to be used only in connection with the sale and purchase of goods) (hereinafter referred to as the ABA Model Agreement); and the Interchange Agreement prepared by Norsk EDIPRO (Norway). 28/

30. Furthermore, the European Model EDI Agreement was prepared in 1994 by the Commission of the European Communities; 29/ and the Model Interchange Agreement for the International Commercial Use of EDI was adopted by the ECE in 1995 (hereinafter referred to as the ECE Model Interchange Agreement). The latter was developed as part of a project under the Action Programme on the Legal and Commercial Aspects of EDI adopted by the ECE Working Party on Facilitation of International Trade Procedures ("WP.4") in 1991. Recommendation No. 26 adopted by the Working Party 30/ specifically calls upon the international community of EDI users, including commercial parties deciding to use EDI in connection with EDI transactions, to apply the Model EDI Agreement in order to increase the legal security of their trading relationships. Also, it recommends that Member States of the United Nations take into account the terms and provisions of the Model Interchange Agreement when introducing legislative and regulatory reforms so as to ensure their consistency with business practices. It was further recommended that the Model Interchange Agreement be incorporated into part 3 of the United Nations Trade Data Interchange Directory (UN/TDID) and be part of the recommendations relating to UN/EDIFACT. 31/ It has, however, been proposed to include in the work programme of the Legal Working Group of the newly established Centre for the Facilitation of Procedures and Practices in Administration, Commerce and Transport (CEFACT) the revision of the Model Interchange Agreement and

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28/ Version 3.0 of the agreement was circulated as document TRADE/WP.4/R.1282, 3 February 1997, at the ECE Working Party on Facilitation of International Trade Procedures, March 1997.

29/ See *Official Journal of the European Communities*, No. L338/105, 28 December 1994, annex 2.

30/ ECE/TRADE/WP.4/R.1133/Rev.1.

31/ See paragraphs 1, 2 and 4 of the Recommendation.

consideration of extending the scope of Recommendation No. 26 to cover in addition electronic commerce and a model technical annex which would eventually result in a revision of the Recommendation. 32/

31. All interchange agreements aim at creating legal certainty and security by providing a set of provisions to govern the relationships between EDI users, including the terms and conditions under which they operate. Most interchange agreements specifically state that they are to apply to the parties' communication relationships and not to the contractual obligations arising from the underlying commercial transactions carried out through the use of EDI. 33/ For example, the Commentary to the ECE Model Interchange Agreement emphasizes that "the Agreement does not set forth rules governing the related commercial transactions for which EDI might be employed since those transactions involve their own bodies of applicable legal rules: for example, sales transactions, shipping contracts, insurance contracts, storage arrangements and similar relationships".

32. It is, however, recognized that to communicate or trade electronically may also affect the underlying commercial transaction. Thus, a number of model agreements, including those limiting the scope of the agreement to communication issues, contain provisions (such as contract formation, terms and conditions) which have an impact on the underlying contractual relationships. 34/

33. Model interchange agreements address a number of issues of basic concern, and the parties are usually permitted to make the necessary modification and adaptation, depending on the nature of the transaction involved. 35/ Some model agreements have been prepared for specific types of transactions. For instance, the ABA Model Agreement is designed to be used only in connection with domestic sale and purchase transactions involving goods, 36/ while others cover a broader range of transactions. Examples of the latter are the United Kingdom and New Zealand Model Agreements, which are

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32/ Report of the Joint GE.1 and GE.2 Session on Legal and Commercial Aspects of Trade Facilitation, September 1997, document TRADE/CEFACT/GE.1/1997/11, annex B.

33/ See, for example, the ECE Model Interchange Agreement, section 1.1; the European Model EDI Agreement, article 1.3; and the Commentary to the United Kingdom and New Zealand Standard Interchange Agreements.

34/ See the ECE Model Interchange Agreement, section 4.3; the European Model EDI Agreement, article 3.3; and the ABA Model Agreement, section 3.1. For further discussion on the subject, see Amelia H. Boss and Jeffrey B. Ritter, "Electronic Data Interchange Agreements", ICC publication, 1993, pp. 36-38.

35/ The ABA Model Agreement and the Commentary strongly encourage the parties to use independent judgement as to the effectiveness of the provisions and the advisability of their use in particular transactions.

36/ See the Commentary to the ABA Model Agreement.

specifically designed for the supply of goods and/or services. There are also interchange agreements of a general nature which cover all types of commercial or administrative uses of EDI, such as the ECE Model Interchange Agreement for the International Commercial Use of EDI. It states that appropriate revisions will be required if it is to be used with administrative or official agencies or for consumer transactions.

34. Model agreements are normally designed for use by two trading partners. Some model agreements, however, permit their provisions to be adapted for multilateral use among multiple trading partners or by a community of EDI users. 37/ Most model agreements are accompanied by a commentary to be used in conjunction with the Agreement to explain the purpose and the intended effect of the provisions of the Agreement, and to provide guidance in preparing the actual interchange agreement. 38/

35. There are considerable variations among interchange agreements as to the extent and scope of their coverage of the technical and legal issues as well as the manner in which such issues are addressed. The following are examples of the main issues covered by most interchange agreements:

- technical and operational specifications, such as maintenance of the appropriate equipment, software and communication system, the structure and format of data messages to be transmitted (for example, the use of the UN/EDIFACT Standards, etc.), means of communication, the choice of third-party service providers, etc.;

- message processing, acknowledgement or verification of receipt of data messages (if required), time limit for sending the acknowledgement, the legal consequences, etc.;

- security measures against the risks of unauthorized access, alteration, loss or destruction of EDI messages, obligation of the parties to adopt reasonable security procedures/specification of particular security measures such as electronic signatures;

- provisions on confidentiality of data messages, if required;

- recording and storage of EDI messages transmitted for tax, accountancy, audit, evidence and other legal or administrative purposes; time limits (variations in national laws), format of storage/storage in original format, etc.;

- validity and enforceability of contracts formed by the use of EDI, admissibility and evidential value of data messages in case of dispute, contract formation, etc.;

37/ See the Commentaries to the ECE Model Interchange Agreement and the European Model EDI Agreement.

38/ See the ABA Model Agreement and Commentary, and the Commentary to the ECE Model Interchange Agreement.

- liability for failure to perform obligations under an interchange agreement, exclusion of liability for certain loss or damage, liability for acts or omissions of third-party service providers;

- provisions for resolution of possible disputes, such as an arbitration or jurisdiction clause;

- the choice of law governing the interchange agreement.

36. Through the use of interchange agreements, trading parties have been able to minimize the risks and uncertainties arising from operations which have not been addressed by law. It should, however, be recalled that interchange agreements are contractual in nature. Consequently, there are limitations on the use of such agreements, for example:

- Obligations arising from mandatory legislation cannot be overcome by contractual arrangements. Where the requirement for a paper document, a handwritten signature or negotiability, etc. arises from a mandatory law, the solution is not through contractual provisions of interchange agreements but by change of legislation.

- Provisions of a contract are binding only on the parties to the contract and cannot regulate the rights and obligations of third parties that are not parties to that agreement. An interchange agreement between the carrier and the shipper of goods will not bind the subsequent buyer of the goods or an endorsee claiming under the bill of lading.

- Contractual provisions are appropriate for resolving legal uncertainties arising from communication through EDI in a closed network, but they are unlikely to provide suitable solutions to the legal problems arising from communication in an open environment where no prior contractual relationship exists. 39/

37. It is evident that contractual arrangements such as interchange agreements do not solve once and for all the legal problems raised by the use of modern electronic means of communication. They were primary measures to bring electronic communications within legal boundaries to the extent possible, without removing the existing barriers. Clearly, the ultimate solution would be through legislative action. An appropriate legal framework would ensure the validity and enforceability of electronic transactions in all circumstances and create certainty in such an important area of law.

C. CMI Rules for Electronic Bills of Lading

38. The Comité Maritime International (CMI), a non-governmental organization working towards contributing to unification of maritime law, adopted in 1990 the Rules for Electronic Bills of Lading. The objective of the CMI Rules is to establish a mechanism for replacing the traditional negotiable paper bill

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39/ See UNCITRAL document "Electronic Data Interchange", A/CN.9/350, 1991, para. 66; and Boss and Ritter, op. cit., pp. 122-123.

of lading with an electronic equivalent. The CMI Rules do not have the force of law: they are entirely voluntary and require a "communication agreement" between trading partners for their application. 40/ They do not interfere with the law applicable to the contract of carriage, such as the Hague, Hague-Visby or Hamburg Rules. They clearly state that "the contract of carriage shall be subject to any international convention or national law which would have been compulsorily applicable if a paper bill of lading had been issued". 41/ The CMI Rules attempt to imitate the function of negotiable bills of lading in an electronic environment. 42/ Under the system the parties agree that the carrier does not have to issue a bill of lading to the shipper. Upon receiving the goods from the shipper, the carrier sends a notice of receipt ("receipt message") of the goods to the shipper at his electronic address, containing information which would have been included if a paper bill of lading had been issued, such as the name of the shipper, the description of the goods with any reservations, the date and place of receipt of the goods, a reference to the carrier's terms and conditions of carriage, and a secret code or what is called a "private key" to be used in subsequent transmissions. 43/

39. The "private key" may be any technically appropriate form, such as a combination of numbers and/or letters, which the parties may agree for securing the authenticity and integrity of a transmission. 44/ The shipper, upon confirming the receipt message to the carrier, is considered to be the "holder" of the private key. The holder of the private key is the only party that can claim the delivery of the goods, nominate the consignee or substitute a nominated consignee for any other party, transfer the right of control and transfer to another party, and instruct the carrier on any other subject concerning the goods as if he were the holder of a paper bill of lading. 45/

40/ See Rule 1.

41/ Rule 6.

42/ The first attempt to facilitate the bill of lading process electronically was through the Sea Docs Registry launched by the Chase Manhattan Bank following an initiative by the International Association of Independent Tanker Owners (Intertanko). This system provided for a central registry of documents instead of their free circulation. The original paper bills of lading having been issued would be deposited with the Registry, which acted as agent for the parties in transactions. Any transfer of ownership would be carried out through the Registry by electronic means. Similarly, information regarding the bills of lading were made available to the parties by the Registry electronically. The project, however, was eventually abandoned.

43/ See Rule 4.

44/ See Rule 2 (f).

45/ See Rule 7 (a).

40. The transfer of the right of control and transfer is effected in the following way: the current holder of the private key notifies the carrier of the intention to transfer to another person the right of control and transfer; the carrier, having confirmed that notification, transmits to the proposed new holder the description and particulars of the goods; upon acceptance by the proposed new holder of the right of control and transfer, the carrier cancels the current private key and issues a new private key to the new holder. 46/ The same procedure is followed in respect of subsequent transfers. The Rules aim at producing the same effects as those produced by the transfer of such rights under a paper bill of lading, without relying on the physical transfer of a piece of paper. 47/ It has, however, been questioned whether the parties' agreement would be sufficient to ensure the validity and enforceability of such transfer of rights in all jurisdictions. "It will depend upon the applicable law to what extent their agreement is given effect not only between themselves but also in relation to third parties". 48/

41. The carrier must accept instructions from, and deliver the goods only to, the party disclosing the valid private key. The private key is unique to each successive holder and is such that his position is the same as it would be as if he had possession of the original paper bill of lading. The private key is not transferable by the holder and must be kept secret in order to prevent its use by unauthorized persons. 49/ The carrier is under an obligation to notify the holder of the private key of the time and place of delivery, and the latter is then required to nominate a consignee, if other than himself, and to give delivery instructions. The delivery of the goods automatically cancels the private key. The carrier is further under an obligation to exercise reasonable care to ascertain the identity of the party that claims to be the consignee, otherwise he will be liable for misdelivery of the goods. 50/ "The carrier assumes liability for any financial loss incurred by shipper, transferor or transferee resulting from a breach of any of his afore-mentioned obligations and according to the same rules which would have applied if a bill of lading had been issued and unauthorized instructions had been followed or cargo delivered to the wrong party". 51/

42. The CMI Rules also allow the parties to opt out of the electronic system, in which case the procedure under the Rules is stopped and the private key is cancelled by the issuance of a paper bill of lading. 52/ This is in

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46/ Rule 7 (b).

47/ See Rule 7 (d).

48/ See the proceedings of the CMI Paris Conference, and the explanatory notes to the CMI Rules, Paris II, 1990, p. 226.

49/ See Rule 8 (a).

50/ See Rule 9.

51/ Explanatory notes to the Rules, Paris II, p. 218.

52/ See Rule 10.

conformity with international rules (such as the Hague, Hague-Visby and Hamburg Rules) or their corresponding national enactment mandatorily applicable to bills of lading, which allow the shipper to demand an original paper bill of lading.

43. In addition, problems which may arise from the requirement, under any national law, that the contract of carriage be evidenced in writing are addressed by provisions which stipulate that electronic recording or a computer printout would satisfy that requirement. The parties are assumed - by their adopting the CMI Rules - to have agreed not to raise the defence that the contract is not in writing. 53/ Again, the legal effect and validity of such contractual provisions will depend on the applicable law.

44. The CMI Rules have been subject to some criticism, for example for placing excessive liability on the carrier, for failure to address the allocation of liability for system breakdown, 54/ and (by the banking community) for the lack of any specified security system. 55/

45. It should be recalled that the CMI Rules do not address technical issues relating to the implementation of electronic bills of lading, and the carrier's liability for misdelivery is intended to be the same as that under a paper bill of lading.

46. Although their legal effect and validity in producing electronic negotiable bills of lading will depend on the applicable law, the CMI Rules constitute an important development in that direction. In jurisdictions in which physical endorsement of a document of title is required, by mandatory legislation, for the transfer of the ownership of goods, paperless transactions under the CMI Rules will have no legal effect. 56/ The CMI Rules, however, provide useful mechanisms for achieving negotiability with regard to electronic transport documents, and in conjunction with an appropriate legislative framework will ensure the validity of such transactions.

D. Bolero Project

47. The Bolero System aims to provide a platform for a secure exchange of electronic trade documentation through a central data application. A unique

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53/ See Rule 11.

54/ See "General Report", in A.N. Yiannopoulos (ed.), "*Ocean Bills of Lading: Traditional Forms, Substitutes and EDI Systems*", The Hague International Academy of Comparative Law, Kluwer Law International, 1995, p. 13.

55/ See George F. Chandler, III, "Maritime electronic commerce for the twenty-first century", paper presented at the CMI Centenary Conference, Antwerp, June 1997, p. 23.

56/ For further discussion on the subject, see Yiannopoulos, op. cit., pp. 37-38.

feature of the Bolero System will be its ability to transfer rights from the holder of a bill of lading to a new holder and thus replicate the functions of the traditional paper-based negotiable bill of lading. The Bolero Project is being developed by S.W.I.F.T., the bank-owned cooperative responsible for inter-bank payment messaging, and the Through Transport Club (TT Club), a mutual insurance company representing carriers, freight forwarders, terminal operators and port authorities. Bolero started life as a cross-industry initiative in 1992 and received some European Union funding in its early stages.

48. In brief, the Bolero System is to provide an infrastructure platform which will enable users to send information to other users in a confidential and uncorrupted manner. It will work by affixing a user's digital signature to each message which is sent to Bolero. Bolero will send on this message to the intended recipient. In addition, different message types, combined with a guarantee that the messages are original (usually termed "singular" or "unique" in electronic terms), will allow users to transfer rights. It is the intention of Bolero to link all participants in the international trade chain. It will interface and work in partnership with established networks and software suppliers so that users' existing proprietary solutions will be enhanced, not replaced.

49. A user's digital signature will work on a public/private key basis. Each user, when registering to use the system, will be provided with a computer-generated algorithmic private key that only the user knows. Recipients of messages from a particular user will be able to verify that the user is who he says he is by using his public key. Thus all messages sent via Bolero can be seen to have authenticity and integrity and will be incapable of repudiation.

50. The Bolero Association Ltd (BAL) represents interested potential users of a Bolero Service and consists of importers, exporters, carriers, freight forwarders, banks, port authorities, terminal operators and insurance companies. It is likely that BAL will form a User Group for the channelling of information between users and the Bolero Service when the latter is established.

51. The Bolero Service will be based on a binding legal framework, consisting of a Rule Book and a Service Contract. A comprehensive responsibility and liability policy will be incorporated into these two central contracts.

52. The Rule Book is a multilateral contract between all users of the Bolero System, and binding on them. Its purpose is to allow users to replicate the legal results currently achieved in the paper environment when using electronic messages instead of documents. The Rule Book will not interfere with the underlying contracts (such as sale, carriage, insurance, settlement and financing contracts) between users except where provisions to replicate the legal effects of these contracts in an electronic environment so dictate.

53. The Rule Book includes, in addition to general terms and conditions, provisions normally found in interchange agreements, covering validity and enforceability, admissibility of electronic messages as evidence before courts

or other tribunals, security, data protection and applicable law. In keeping with its aim of non-interference with underlying contracts between users the Rule Book contains a non-exclusive jurisdiction clause which will allow the parties to continue to select the forum for resolution of trade disputes. The key elements of the Rule Book are the clauses which ensure that the handling and transfer of negotiable bills of lading through the Bolero System are legally binding and reproduce the same legal results as in the case of paper documents.

54. Service contracts will cover issues relating to the use of the Bolero Service, governing levels of service, security, confidentiality, responsibility and liability. The relationship between the Bolero Service and third-party suppliers will also be set out.

55. The Bolero Service is intended to provide a responsibility and liability policy to protect users' underlying business transactions and ensure confidence in the operations of the System. Although the details are not yet finalized, it is proposed that the Bolero Service will be responsible for delay in transmission of a message, misdelivery of a message and breach of confidential information.

56. The Central Title Application will govern the ability to transfer rights under a bill of lading. The Title Application will maintain a record of who has rights to a particular document, but for reasons of confidentiality this information will be available only to those authorized by the holder of the rights.

57. The Bolero bill of lading will replicate the functions of a traditional bill of lading through a series of electronic messages. Also, the Bolero Service will permit the use of electronic non-negotiable bills of lading and electronic waybills. The Bolero bill of lading will (i) act as a receipt for the goods from the carrier; (ii) contain the terms and conditions of the carriage contract; and (iii) give the holder the exclusive right to control, allowing him the right of transfer to a new holder and, ultimately, as the party entitled to possession, the right to give the carrier instructions regarding delivery. The Bolero bill of lading will be capable of granting a pledge over the goods to a bank; hence, it will be able to be used by banks as security for loans made in connection with international trade.

58. Most international transport conventions require a written document, but these conventions will not apply to Bolero bills of lading by force of law. For example, the Hague and Hague-Visby Rules will apply only if a bill of lading has been or is intended to be issued. Since the Bolero bill of lading will not satisfy the formalities required, the Rule Book provides that any international law or international convention which would have applied had the document been produced in paper form will be incorporated into the carriage contract if Bolero electronic messages are used instead.

59. For a system such as Bolero to succeed a number of central issues relating to confidentiality and the rights and liabilities of both the users and providers of the service will need to be satisfactorily addressed. It is

hoped that current consultations with the trade industry will assist the Bolero Project Team in finding appropriate solutions to the issues involved. 57/

E. Authentication/digital signatures

60. Information security and message authenticity are of paramount importance in an electronic environment. The absence of a paper document and a handwritten signature makes it difficult to distinguish the original message from a copy. The fact that electronic messages can be easily altered without detection increases the risk of fraud. The need for some form of security procedure is even more pressing in the context of open network communication systems such as the Internet. In a closed network, contractual relationships and the system's security procedures provide assurance as to the identity of the trading partners or the integrity of the information. Such mechanisms are insufficient or irrelevant in relation to a public infrastructure such as the Internet, where a transaction takes place between complete strangers from different parts of the world. Thus the increased use of open communication networks will also mean increased risk of fraud and unauthorized access.

61. As the Communication adopted by the Commission of the European Communities, in October 1997, on digital signatures and encryption 58/ states:

> "Overall, the increasing use of open networks offers the possibility to create new businesses, new channels of distribution and new methods of reaching the customer. It also opens up opportunities to re-engineer business conduct itself.
>
> However, the realisation of such developments are hampered by the noticed insecurities typical to open networks: messages can be intercepted and manipulated, the validity of documents can be denied, personal data can be illicitly collected. Fraud is already increasing in several forms. Therefore, today, important electronic documents are usually only exchanged in so-called 'closed networks', that is, involving users between whom contractual relationships and mutual trust already exist. This model cannot be transferred to open networks because of the absence of such relationships between users. As a result, the attractiveness and advantage of electronic commerce and communication cannot be fully exploited.
>
> In order to make good use of the commercial opportunities offered by electronic communication via open networks, a secure and trustworthy environment is therefore necessary. Cryptographic technologies are nowadays widely recognised as the essential tool for security and trust in electronic communication. Two important applications of cryptography are digital signatures and encryption. Digital signatures can help to

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57/ A fuller description of the Bolero approach can be found at the Bolero Project Website at www.boleroproject.com.

58/ See "Towards a European Framework for Digital Signatures and Encryption", http://www.ispo.cec.be/eif, October 1997.

prove the origin of data (authentication) and verify whether data has been altered (integrity). Encryption can help keeping data and communication confidential."

62. The existence of reliable security mechanisms is therefore crucial for the development of a trustworthy electronic environment. Various techniques, such as "digital signature" techniques and other forms of electronic signatures (any electronic symbols, characters or similar means), are currently used, or being developed, to perform the functions of handwritten signatures in an electronic environment.

63. The creation of a legal regime governing such signatures is considered to be a key to the growth of electronic commerce, including transferability of rights in goods through electronic means of communication. Considerable work is currently under way to address the legal issues of digital signatures at the national, regional and international level. 59/

64. There are various ways of signing a document electronically. Electronic signatures based on "public-key cryptography" or "dual-key cryptography" are known as digital signatures. They employ an algorithm using two different but mathematically related keys. The so-called private key is used only by the signer to create a digital signature, and the public key can verify the digital signatures created by the private key. While the private key is known only to the signer and must be kept secret, the public key must be available to those who need to verify the signer's digital signature. Although the public and private keys are mathematically related keys, it is not possible to discover the private key by knowing a given public key. The public key can therefore be publicized, for example through a public directory, without the risk of disclosure of the private key and its use to forge digital signatures. 60/

59/ Some countries/jurisdictions have already enacted laws on digital signatures or electronic signatures, and others are in the process of preparing legislation on the subject. The American Bar Association has published the "Digital Signature Guidelines" (1996). The International Chamber of Commerce (ICC) issued in November 1997 a set of guidelines for ensuring and certification of digital messages known as "General Usage in International Digitally Ensured Commerce (GUIDEC)". The UNCITRAL Working Group on Electronic Commerce is currently working towards the elaboration of draft uniform rules on digital signatures and certification authorities. The OECD adopted "Guidelines for Cryptography Policy" in March 1997. For a summary of draft and enacted digital signature legislation within the United States of America (currently around 40 States) and a number of other countries, see www.mbc.com.

60/ See the ABA Digital Signature Guidelines, pp. 8-9; and the UNCITRAL report entitled "Planning of Future Work on Electronic Commerce: Digital Signatures, Certification Authorities and Related Legal Issues" (hereinafter referred to as "the UNCITRAL report"), A/CN.9/WG.IV/WP.71, 31 December 1996, paras. 18-25.

65. Digital signatures allow the recipient to verify the *authenticity* and the origin of the data as well as its *integrity* and the fact that data has remained unaltered since its creation.

66. Through the process of verification, the recipient of a digitally signed message can accurately establish that the digital signature was created by the signer's private key corresponding to the public key, and that the message has not been altered since it was digitally signed. 61/ To verify a digital signature, there is a need to have access to the signer's public key and an assurance that it corresponds to the signer's private key.

67. The verification process, however, does not necessarily establish the identity of the owner of the public key. The recipient of a data message will also need to know with a degree of certainty that the sender is in fact the person he claims to be. A public and private key pair being simply a pair of numbers, a reliable mechanism is necessary to link a particular person or entity with the key pair. This is done through the use of trusted third parties, or what is often referred to as "certification authorities". Certification authorities play a crucial role in ensuring acceptability and legal recognition of digital signatures. Therefore, the legal basis for their operation, including their duties and responsibilities, is invariably addressed in recent national laws on digital signatures.

68. To associate a key pair with a prospective signer, a certification authority issues a certificate, an electronic record which lists a public key as well as other details and confirms that the prospective signer identified in the certificate holds the corresponding private key. The main function of a certificate is to bind a key pair with a particular subscriber. A recipient of the certificate can use the public key listed in it to verify that the digital signature was created with the corresponding private key, and that the message has not been changed since it was digitally signed. The certificate must be digitally signed by the certification authority, whose signature can also be signed by another certification authority, and that certificate can in turn be verified until the authenticity of the certificate is assured. 62/

69. A certificate issued by a certification authority can include information on the identity of the signer and of the certification authority issuing it, the signer's public key, the date of expiry of the certificate, and limits of liability or other information, depending on the purpose and type of transactions for which the key is to be used. A certificate may be invalidated because of misrepresentation of material facts, such as the identity of the signer. Also, it may be suspended or revoked by the certification authority if the private key is "compromised" for example as a result of the signer's loss of control of the private key.

70. Digital signatures are recognized as providing a solution to questions of authentication and integrity of electronic messages, particularly in the

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61/ See the ABA Digital Signature Guidelines, pp. 11, 58.

62/ See the ABA Digital Signature Guidelines, pp. 13-15; and the UNCITRAL report, A/CN.9/WG.IV/WP.71, paras. 28-45.

context of transactions conducted through open network systems where parties are total strangers and have no prior contractual relationships. However, wider use of digital signatures requires adaptation in national legal frameworks so as to enable such technologies to achieve the intended objective of providing a truly reliable and trustworthy electronic environment. There is a need for a legal infrastructure setting out all the relevant rules and regulations pertaining to digital signatures, certification authorities and related issues, including the legal effect of such signatures, the rights and duties of the parties, certification authorities, their liability to those who rely in good faith on the certificates they issue, criteria to be fulfilled by certification authorities and whether they should be government-controlled, accredited, licensed or freely operated commercial entities, and international recognition of certificates.

71. The establishment of certain requirements for operation of certification authorities through a licensing mechanism or governmental authorization is considered necessary for promoting confidence in, and greater use of, digital signatures. Indeed, some recent national laws and draft legislation set out criteria for public authorization or licensing of certification authorities. In debating the subject the UNCITRAL Working Group adopted a dual approach of accommodating both publicly licensed and non-licensed certification authorities within the future uniform rules. It was considered, however, that the difference between the two situations would be the legal effect given to digital signatures in one or the other case. 63/

72. The recent national laws and draft legislation aimed at addressing the legal issues pertaining to digital signatures and certification authorities often adopt varying approaches to the questions involved. The development of diverse and disunified legislative approaches, however, can effectively work as deterrents to the growth of international electronic commerce. The work of international and intergovernmental organizations such as UNCITRAL can assist in creating international uniformity and harmonization of the laws on the subject. The deliberations within the UNCITRAL Working Group on Electronic Commerce for the preparation of draft uniform rules on the subject are still at a preliminary stage. It is expected that common principles for the development of future laws and regulations will be established. 64/

73. At the European level, however, the Communication adopted by the Commission of the European Communities on digital signatures and encryption in October 1997, and the Bonn Ministerial Declaration of July 1997, 65/ stressed

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63/ See UNCITRAL document A/CN.9/437, March 1997, para. 48. For detailed discussions on the subject within the UNCITRAL Working Group on Electronic Commerce at its thirty-second session, see document A/CN.9/446, 11 February 1998.

64/ For detailed information on the work of UNCITRAL on digital signatures and certification authorities, see UNCITRAL reports A/CN.9/WG.IV/WP.71, A/CN.9/437, A/CN.9/WG.IV/WP.73 and A/CN.9/446.

65/ See the European Ministerial Conference Declaration, http://www.echo.lu/bonn/Conference.html.

the necessity of a legal and technical framework for digital signatures at European level. The policy actions proposed by the Communication included the need for a Community framework for digital signatures and action by the European Union. Referring to detailed regulations being prepared in some Member States (such as France, Germany, Italy, Denmark and Belgium), it states that:

> "Whilst the development of a clear framework is welcomed, the very divergent legal and technical approaches which have already appeared and the absence of any legal environment in other Member States - also possibly justified - might constitute a serious barrier to doing business and communicating throughout the European Union .... In order to stimulate electronic commerce ... and to facilitate the use of digital signatures across national borders, a common framework at community level is urgently needed and should be put in place at the latest by the year 2000." 66/

74. The proposed goal of any Community initiative would be "to encourage Member States to rapidly implement appropriate measures to build trust in digital signatures". The Commission therefore considered proposing, in the context of the Amsterdam Treaty, first-pillar legislation on the basis of the Communication. The scope of a Community framework would include: (i) Common legal requirements for certification authorities. It is considered that by establishing common criteria for the activities of certification authorities a framework would be put in place allowing certificates issued by a certification authority in one Member State to be recognized in all other Member States. (ii) Legal recognition of digital signatures. To achieve as wide as possible acceptance of digital signatures, national legal systems may need to be adapted to ensure that they offer the same recognition and treatment to digital signatures as to conventional signatures. (iii) International cooperation. Electronic communication being international, it is proposed that once a Community position has been established, a framework be established at an international level, including Europe's participation in international initiatives and forums. 67/

F. Activities of the United Nations Economic Commission for Europe

75. The programme of work adopted in March 1991 by the Working Party on Facilitation of International Trade Procedures (WP.4) of the United Nations

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66/ Op. cit., section IV.1.1. The Commission has proposed a Directive on a common framework for electronic signatures (COM(1998)297/2).

67/ Ibid., section IV.1.2. In March 1997, the OECD adopted "Guidelines for Cryptography Policy" setting out principles to be followed by Governments in formulating their policies for the use of cryptography. The recommendation of the OECD Council recognizes that "cryptography can be an effective tool for the secure use of information technology by ensuring confidentiality, integrity and availability of data and by providing authentication and non-repudiation mechanisms for that data".

Economic Commission for Europe, 68/ the body responsible for the development of UN/EDIFACT, focused on the legal issues pertaining to the use of EDI in international trade. The programme, in addition to the development of a model interchange agreement for international commercial use of EDI, 69/ covered separate projects aimed at eliminating any constraints on international trade through problems of a legal or commercial practices nature. It included the issues of negotiability and transferring rights through the use of negotiable documents such as bills of lading, as well as means of achieving electronic negotiability; identification of existing legal barriers to the use of EDI and similar technologies through the development of a questionnaire leading to appropriate recommendations and actions; 70/ and the development of uniform definitions of "writing", "document", "signature" and other appropriate terms to include messages transmitted by EDI. 71/

76. However, in the light of the near completion of the current work programme and the move to the new Centre for Facilitation of Procedures and Practices for Administration, Commerce and Transport (CEFACT), it was proposed that a permanent working group named the CEFACT Legal Group be established "to address the legal issues of international trade practices and procedures supported by the use of new technologies including electronic commerce and EDI". 72/ The Legal Group is to identify the relevant legal issues, analyse the key issues to determine actions to be undertaken, and propose solutions and practical tools to address the legal impediments identified. 73/ It was suggested that any future work should take into consideration all forms of electronic commerce, including both structured and unstructured message formats, as well as the impact of the rapid growth of the Internet and its interface with the EDI process. 74/

68/ See document TRADE/WP.4/R.697.

69/ For discussion on the ECE Model Interchange Agreement, see paragraphs 30-34 of the present document.

70/ For further information on the questionnaire, see document TRADE/WP.4/R.1007/Rev.1.

71/ See document TRADE/WP.4/R.1096, 22 July 1994, which reviews definitions of "writing", "signature" and "document" employed in multilateral conventions and agreements relating to international trade.

72/ See the draft mandate of the CEFACT Legal Group, Report of the Fifty-fifth Session of the Meeting of Experts on Data Elements and Automatic Data Interchange, TRADE/CEFACT/GE.1/1997/1, April 1997, annex I.

73/ Ibid.

74/ Ibid., Future Work Programme, para. 8.

77. Issues proposed for inclusion in the work programme of the CEFACT Legal Working Group are as follows:

(a) Model Interchange Agreement: the Legal Working Group in reviewing the Model Interchange Agreement will consider extending the scope of Recommendation No. 26 to cover in addition electronic commerce and a model technical annex which would eventually result in a revision of the Recommendation;

(b) National legal and commercial barriers to international trade: continuation of the ongoing analysis of responses to the questionnaire;

(c) Electronic authentication: updating the inventory of international trade and transport conventions and agreements, including references to "signature", "writing" and "document", 75/ and extending the scope of the study to cover other international instruments relevant to international trade law. The critical issues outlined include "the difficulty of re-negotiating well-established international conventions that dealt with substantive legal issues and went far beyond establishing form requirements; the desirability and feasibility of preparing yet another convention to interpret existing form requirements, which might result in complex issues of conflicting conventions; alternatively the possibility of promoting the UNCITRAL Model Law on Electronic Commerce as a tool for interpreting existing instruments"; 76/

(d) Data protection: preparation of practical guidelines for users;

(e) Private international law: a number of important issues such as jurisdiction and dispute settlement in the context of the development of the Internet, needing to be addressed at the international level; 77/

(f) Model Intermediary Agreement: the elaboration of a new UN Recommendation on the subject could be envisaged;

(g) ICC E-Terms Repository: monitoring the progress of work within the ICC and providing guidance to users, as it could be relevant to the revision of the Model Interchange Agreement;

75/ Document TRADE/WP.4/R.1096.

76/ See Report of the Joint GE.1 and GE.2 Session on Legal and Commercial Aspects of Trade Facilitation, TRADE/CEFACT/GE.1/1997/11, annex B, para. 3 (c).

77/ A colloquium on jurisdiction and applicable law on the Internet was organized by the Hague Conference on Private International Law in June 1997.

(h) Educational tools: increasing awareness and facilitating understanding of legal issues linked to electronic commerce and EDI through, for example, Websites, videos and other educational tools;

(i) Legal review of UN/EDIFACT messages. 78/

78. Priority is, however, to be given to the review of the ECE Model Interchange Agreement, electronic authentication and other items, depending on the progress made. Certain issues such as negotiability or the requirement for certification authorities are no longer included in the new work programme because of a lack of resources or work being carried out in other international organizations. 79/

G. Activities of the International Chamber of Commerce

79. To develop and promote an electronic alternative to paper-based methods of trade transaction, the International Chamber of Commerce (ICC) developed the so-called E-100 project. It included working parties on electronic credit, electronic transport documents, open account trading, legal and regulatory matters, e-terms and digital authentication. The E-100 project has now been restructured and replaced by the Electronic Commerce Project (ECP). This includes three working groups: (i) Electronic Trade Practices, (ii) Information Security and (iii) E-Terms. The Working Group on Electronic Trade Practices is to develop a self-regulatory framework for electronic trade payments, through cooperation with other relevant organizations. The Working Group on Information Security has developed a set of guidelines "to enhance the ability of the international business community to execute secure digital transactions", known as "General Usage in International Digitally Ensured Commerce (GUIDEC)". 80/ The GUIDEC establishes "a general framework for the ensuring and certification of digital messages, based upon existing law and practice in different legal systems". It applies to the use of public key cryptography for digital signatures and the role of trusted third parties, referred to as "certifiers". It adopts the term "ensure" to describe what elsewhere is called "digital signature" or "authentication", in an attempt to remove the element of ambiguity inherent to other terms. 81/ Finally, the Working Group on E-Terms is developing a new ICC service providing a central electronic repository for legal terms applicable to electronic transactions.

78/ See the report of the Joint GE.1 and GE.2 Session on Legal and Commercial Aspects of Trade Facilitation, TRADE/CEFACT/GE.1/1997/11, annex B, para. 3.

79/ Ibid., para. 4.

80/ http://www.iccwbo.org.

81/ Ibid., Preface, p. 2.

H. Activities of the Commission of the European Communities

80. The Commission of the European Communities as part of its TEDIS (Trade Electronic Data Interchange System) programme conducted a number of studies aimed at promoting the development of EDI and electronic trading.

81. The first phase of the TEDIS programme included a study of legal obstacles to the use of EDI in the 12 Member States. The study, entitled "The Legal Position of the Member States with respect to Electronic Data Interchange" (hereinafter referred to as the TEDIS Study), 82/ after analysing the situation in various legal systems identified the following as the principal types of legal constraints on development of EDI:

- The obligation, imposed in certain jurisdictions, to make out, produce, send or preserve signed paper documents either as a condition of validity of a legal transaction, or as a valid proof of a legal transaction or fact;

- The transience of information transmitted by electronic data interchange and the consequent difficulty in producing evidence of the transaction;

- The difficulty in determining the moment and place at which the transaction effected by electronic data interchange was concluded. 83/

82. A similar analysis was then conducted in relation to the position in the Member States of the European Free Trade Association (EFTA). The conclusions reached were somewhat similar to those of the study on the position in the 12 European Community Member States. 84/

83. The Commission has also published, under the TEDIS programme, specific reports on various issues, including reports on "the formation of contract by Electronic Data Interchange", 85/ "an electronic alternative to negotiable documents", 86/ "the legal constraints and inadequacies relating to the use of

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82/ Commission of the European Communities, Brussels, September 1989.

83/ pp. 277-291.

84/ See "The Legal Position in the EFTA Member States regarding Trade Electronic Data Interchange", TEDIS, Commission of the European Communities, July 1991, reprinted 1993, pp. 93-107.

85/ July 1991, reprinted 1993.

86/ Final report, April 1995.

EDI in the field of accounting" in the Member States of the European Community (1993) and in EFTA Member States (February 1994), "risk analysis in EDI", 87/ and "authentication, storage and use of codes in EDI messages". 88/

84. The work carried out under the second phase of the TEDIS programme also included the preparation of the European Model EDI Agreement, together with an official commentary, in 1994. 89/ The objective of the Model Agreement, as with other interchange agreements, is to provide a contractual legal framework to govern the EDI relationship between the parties, including their terms and conditions of operation.

85. In addition, the Commission published Communications on electronic commerce in April 1997, 90/ and on digital signatures and encryption in October 1997. 91/ It has also proposed a Directive on a common framework for electronic signatures (COM(1998)297/2). The aim of the European Initiative in Electronic Commerce was "to encourage the vigorous growth of electronic commerce in Europe". It stressed the importance of creating a favourable regulatory framework as an essential element for the development of electronic commerce, stating that:

> "The pace and the extent to which Europe will benefit from electronic commerce greatly depends on having up-to-date legislation that fully meets the needs of business and consumers. The objective of the Commission is to implement the appropriate regulatory framework by the year 2000."

86. It put forward a set of action-oriented proposals for advancing electronic commerce in Europe. Suggestions for creating a favourable regulatory framework include:

- Identifying single-market barriers and legal uncertainties affecting electronic commerce;

87/ Final report, 1993.

88/ Reports by Member States and EFTA countries, vol. II, III/2137/95.

89/ See *Official Journal of the European Communities*, No. L338/105, 28 December 1994.

90/ See "A European Initiative in Electronic Commerce", http://www.ispo.cec.be/Ecommerce, April 1997.

91/ For further information, see paras. 73-74 of the present document.

- Launching regulatory initiatives in the areas of electronic payments, contracts negotiated at a distance for financial services, copyrights and neighbouring rights, legal protection of conditional access services, and digital signatures;

- Assessing the need for further initiatives covering single-market horizontal questions, regulated professions, commercial communications, contract law, accounting, fraudulent use of electronic payments, data security, data protection, industrial property, direct and indirect taxation, and public procurement;

- Reinforcing international dialogue in the appropriate multilateral and bilateral forums to achieve an adequate global regulatory framework for electronic commerce, in particular in data security, data protection, intellectual property rights, and taxation.

Chapter II

REVIEW OF LEGAL ISSUES

87. A survey of the provisions of international conventions and agreements applicable to international trade and transport, conducted as part of the action programme on legal aspects of trade data interchange of the ECE Working Party on Facilitation of International Trade Procedure (WP.4), confirmed that "the current rules concerning international trade transactions may not satisfactorily accommodate the reality of EDI. In many instances, under these rules, EDI messages remain potentially unacceptable as legal means of communication". 92/ The existing requirements, under national laws and certain international conventions applicable to international trade transactions, for writings, documents or manual signatures are regarded as constituting major obstacles to the development of electronic commerce at global level.

88. Following a decision by the ECE Working Party, a detailed questionnaire has been circulated with the aim of identifying the legal and commercial practices which impose barriers to the use of EDI and similar electronic means of communication. 93/ The analysis of the replies to the questionnaire, when finalized, will provide a good indication as to the nature of legal requirements which may hamper the international development of electronic commerce.

89. The study of the legislation of the European Community Member States, under the TEDIS programme, identified the requirements for written documents and manual signatures, as well as the legal requirements relating to evidence, as major legal impediments to the use of EDI. However, investigations carried out by the UNCITRAL secretariat concluded that at the global level there were fewer problems with the use of data stored in computers as evidence in litigation than might have been expected. But more serious legal obstacles to the use of computers and computer-to-computer telecommunications in international trade arose out of requirements that documents be signed or that they be in paper form. 94/ Indeed, the UNCITRAL Model Law was prepared on the basis of the recognition that legal requirements prescribing the use of traditional paper-based documentation constituted the main obstacle to the development of modern means of communication. 95/

92/ See "Legal Aspects of Trade Data Interchange: Review of Definitions of 'writing', 'signature' and 'document' Employed in Multilateral Conventions and Agreements Relating to International Trade, TRADE/WP.4/R.1096, July 1994, section 1.6.

93/ See "Legal Aspects of Trade Data Interchange: International Trade - National Legal and Commercial Practice Barriers", TRA/WP.4/R.1007/Rev.1, August 1994.

94/ See the UNCITRAL secretariat report "Legal Value of Computer Records", A/CN.9/265, February 1985.

95/ See Guide to Enactment of the Model Law, para. 15.

90. This chapter attempts to examine some of the legal issues which are regarded as creating obstacles or uncertainties in relation to the use of electronic means of communication in international trade, and need to be addressed if electronic commerce is to become a widespread practice. In addition, it reviews solutions adopted by the relevant model laws and provisions as well as by model trading partner agreements.

A. Requirement for a "written document"

91. Most national laws and international conventions include provisions requiring certain transactions to be concluded or evidenced in writing or certain information to be presented in writing. A writing may be required for variety of reasons. If it is required as a condition of validity of the contract, failure to comply with the requirement would render the transaction null and void. If, on the other hand, a writing is required by law for evidentiary purposes, the absence of a writing will not generally affect the validity of the contract but its enforceability in the event of litigation. 96/ As pointed out in the study published by the Commission of the European Communities:

> "The requirement of writing as a condition of validity of a legal transaction clearly represents an absolute a priori impediment to the development of EDI. Electronic data interchange cannot be used to accomplish legal transactions for as long as this remains a requirement." 97/

92. International conventions adopted in recent years do not contain provisions imposing form requirements, such as requirements for writing or signed paper documents. The United Nations Convention on Contracts for International Sale of Goods, 1980, specifically provides that "a contract of sale need not be concluded in or evidenced by writing and is not subject to any other requirement as to form. It may be proved by any means including witnesses". 98/ Some conventions such as the Hamburg Rules and the Multimodal Transport Convention provide an extended and non-exhaustive definition of "writing" to include telegram and telex. 99/ Similarly, under the UNIDROIT

96/ See the UNCITRAL report "Preliminary Study of Legal Issues Related to the Formation of Contracts by Electronic Means", A/CN.9/333, May 1990, paras. 10-14.

97/ "The Legal Position of the Member States with respect to Electronic Data Interchange", p. 278.

98/ Article 11. The Convention, however, permits contracting States to override these provisions in respect of contracts connected with their territory by declaring that all contracts must be made in writing. See articles 12 and 96.

99/ See the United Nations Convention on the Carriage of Goods by Sea, 1978 (Hamburg Rules) and the United Nations Convention on Multimodal Transport of Goods, 1980, article 1.

Convention on International Factoring, 1988, the definition of "notice in writing" "includes, but is not limited to, telegrams, telex and any other telecommunication capable of being reproduced in tangible form". 100/

93. National or international legislation, however, often refers to "writing" or "document" without providing a definition of these terms. In such a case, it is assumed that a written document was envisaged by the drafter, as that was the only format then available. 101/

94. A number of countries/jurisdictions have either enacted or are in the process of preparing legislation to accommodate electronic commerce by eliminating form requirements in their domestic laws. The UNCITRAL Model Law, which aims at providing guidance to enacting States in this respect, includes provisions to that effect.

95. Article 6 of the Model Law, which deals with the issue of "writing", does not attempt to extend the definition of that term so as to encompass electronic means of communication. It adopts what is called the "functional equivalent approach" by setting out the basic conditions which a data message must fulfil in order to be considered as meeting a national law requirement that information be retained or presented in "writing", in a "document" or other paper-based instrument. 102/ It provides as follows:

> "(1) Where the law requires information to be in writing, that requirement is met by a data message if the information therein is accessible so as to be usable for subsequent reference.
>
> (2) Paragraph (1) applies whether the requirement therein is in the form of an obligation or whether the law simply provides consequences for the information not being in writing.
>
> (3) The provisions of this article do not apply to the following ..."

96. The UNCITRAL Guide to Enactment of the Model Law explains that a data message in and of itself cannot be regarded as an equivalent of a paper document in that it is of a different nature and does not necessarily perform all the conceivable functions of a paper document. That is why the Model Law adopted a flexible standard, taking into account the various layers of existing requirements in a paper-based environment: when adopting the "functional-equivalent" approach, attention was given to the existing hierarchy of form requirements, which provides distinct levels of reliability, traceability and unalterability with respect to paper-based documents. For example, the requirements that data be presented in written form

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100/ Article 1 (4) (b).

101/ See ECE document "Legal Aspects of Trade Data Interchange: Review of Definitions of 'Writing', 'Signature' and 'Document' Employed in Multilateral Conventions and Agreements Relating to International Trade", TRADE/WP.4/R.1096, 1994, para. 1.13.

102/ See Guide to Enactment of the Model Law, para. 47.

(which constitutes a "threshold requirement") are not to be confused with more stringent requirements such as "signed writing", "signed original" or "authenticated legal act". 103/

97. Article 6, therefore, does not lay down a requirement that, in all instances, data messages fulfil all conceivable functions of a writing. It only focuses on the basic notion of the information being reproduced and read, by providing that information contained in a data message must be "accessible so as to be usable for subsequent reference". The term "accessible" is used to imply that "information in the form of computer data should be readable and interpretable, and that the software that might be necessary to render such information readable should be retained. The word 'usable' is not intended to cover only human use but also computer processing". 104/

98. Article 6 (3) permits enacting States to exclude certain situations from its application. An example of such an exclusion may be the case of writing formalities required pursuant to international treaty obligations of the enacting State and other areas of law that are beyond the power of the enacting State to change by means of a statute. It is, however, emphasized that numerous exclusions from the scope of article 6 and other provisions of the Model Law would frustrate the objectives of the Model Law in promoting electronic commerce. 105/

99. In the absence of a legislative framework, interchange agreements are used by trading parties to address questions of validity and enforceability of contracts formed through the use of EDI instead of traditional written documents. Almost all interchange agreements contain provisions to that effect, although varying approaches are adopted. Some model agreements define electronic transmissions, in accordance with the interchange agreement, to be within the definition of "writing". For example, the ABA Model Agreement states that:

> "Any document properly transmitted pursuant to this Agreement shall be considered ... to be a 'writing' or 'in writing'; and any such document when containing, or to which there is affixed, a signature ('signed documents') shall be deemed for all purposes (a) to have been 'signed' and (b) to constitute an 'original' when printed from electronic files or records established and maintained in the normal course of business." (Section 5.3.3.2)

100. Some model agreements adopt a different approach: they provide that the parties agree to waive their right to contest the validity or enforceability of EDI messages. The European Model EDI Agreement provides as follows:

103/ Ibid., para. 17; see also para. 49.

104/ Ibid., para. 50.

105/ Ibid., paras. 51-52.

"The parties, intending to be legally bound by the Agreement, expressly waive any rights to contest the validity of a contract effected by the use of EDI in accordance with the terms and conditions of the Agreement on the sole ground that it was effected by EDI." (Article 3.1)

101. Similarly, the ECE Model Interchange Agreement states:

"The parties agree that valid and enforceable obligations may be created by the communication of messages in compliance with this Agreement. The parties expressly waive any rights to object to the validity of a transaction solely on the ground that communication between the parties occurred through the use of Electronic Data Interchange." (Section 4.1)

B. Requirement for "signature"

102. Signature or other forms of authentication is normally required to establish the identity of the signatory and his intention to associate himself with, or be bound by, the contents of the document. The most common form of authentication required by law is manual signature. The more recent national laws or international conventions, however, permit the required signature to be made by other forms of authentication, such as stamp, perforation or facsimile, or by electronic means. The Hamburg Rules, for example, provides that "the signature on the bill of lading may be in handwriting, printed in facsimile, perforated, stamped, in symbols, or made by any other mechanical or electronic means, if not inconsistent with the law of the country where the bill of lading is issued". 106/ The Convention on Liability of Operators of Transport Terminals takes a different approach. It allows the required signature to be in the form of "handwritten signature, its facsimile or an equivalent authentication effected by any other means". 107/

103. Investigations carried out by a number of organizations, such as the ECE, UNCITRAL and the Commission of the European Communities, have identified the legal requirement for a signature on documents used in international trade as a major obstacle to the growth of electronic commerce. The fact that this requirement is closely linked with the use of paper documents of itself poses a barrier to the use of electronic means. 108/

104. Thus, attempts have been and are being made to encourage the removal of the mandatory requirements in national and international legislation for handwritten signatures. As long ago as 1979 the ECE Working Party on

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106/ Article 14 (3). The Multimodal Transport Convention contains an identical provision (see article 5 (3)).

107/ Article 4 (4).

108/ For further discussion of the requirement for signature, see the ECE publication "Trade Data Elements Directory", vol. III, "Authentication of Trade Documents by Means Other than Signature", ECE/TRADE/200, pp. 86-94. See also UNCITRAL documents A/CN.9/265, paras. 49-58; A/CN.9/933, paras. 50-59; A/CN.9/350, paras. 86-89; and A/CN.9/WG.IV/WP.53, paras. 61-66.

Facilitation of International Trade Procedures recommended "Governments and international organizations responsible for relevant intergovernmental agreements to study national and international texts which embody requirements for signature on documents needed in international trade and to give consideration to amending such provisions, where necessary, so that the information which the documents contain may be prepared and transmitted by electronic or other automatic means of data transfer, and the requirements of a signature may be met by authentication guaranteed by the means used in the transmission". 109/ Similarly, in 1985 the UNCITRAL Commission recommended Governments:

> "To review legal requirements of a handwritten signature or other paper-based method of authentication on trade related documents with a view to permitting, where appropriate, the use of electronic means of authentication." 110/

105. To provide a practical guide to enacting States in adapting their existing law and the necessary legislative reform, article 7 of the UNCITRAL Model Law specifically deals with the issue of signature. It provides that:

> "(1) where the law requires a signature of a person, that requirement is met in relation to a data message if:
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> (a) a method is used to identify that person and to indicate that person's approval of the information contained in the data message; and
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> (b) that method is as reliable as was appropriate for the purpose for which the data message was generated or communicated, in the light of all the circumstances, including any relevant agreement."

106. Article 7 aims at ensuring that a data message is not denied legal validity on the sole ground that it was not authenticated in a manner peculiar to paper documents. "It establishes the general conditions under which data messages would be regarded as authenticated with sufficient credibility and would be enforceable in the face of signature requirements which currently present barriers to electronic commerce". 111/ In adopting the "functional-equivalent" approach, article 7 focuses on the main functions of a signature, namely the identification of the author of a document and the indication of the author's approval of the contents of the message. "Paragraph 1 (a) establishes the principle that, in an electronic environment,

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109/ Recommendation No. 14, ECE/TRADE/200, TRADE/WP.4/TNF.63.

110/ Official Records of the General Assembly, Fortieth Session, Supplement No. 17 (A/40/17), para. 360.

111/ Guide to Enactment of the Model Law, para. 56.

the basic legal functions of a signature are performed by way of a method that identifies the originator of a data message and confirms that the originator approved the content of that data message." 112/

107. Article 7 (1) (b) does not prescribe a particular method of authentication. It adopts a flexible approach, allowing any method which is as "reliable" as is "appropriate" for the purpose for which the particular data message is generated or communicated in the light of all relevant circumstances. Thus, conditions laid down under article 7 are met if a reliable and appropriate method is used to identify a person (originator of a data message) and to indicate that person's approval of the information contained in the data message. In determining whether the method used is appropriate all relevant circumstances of the case, including the legal, technical and commercial factors, must be taken into consideration. 113/

108. With a view to providing guidance as to the manner in which the principles embodied in article 7 may be implemented, the work within UNCITRAL is taken further through the preparation of uniform rules on digital signature. 114/ The UNCITRAL Working Group on Electronic Commerce, charged with preparing draft uniform rules, agreed that although its work initially focused on digital signature techniques, that work should not discourage the use of any other technique that would provide a reliable and appropriate method of authentication under article 7. 115/

109. Most model interchange agreements address the issues of authentication and verification of data messages. The approaches adopted, however, are by no means uniform. Some model agreements deal with the subject as part of the overall security procedure. Others address the question separately in an accompanying User Manual. There are model agreements which require the parties to adopt an electronic symbol or code as an authentication measure. Some agreements merely require procedures allowing verification of the identity of the sender. 116/

112/ Ibid.

113/ See the Guide to Enactment of the Model Law, which sets out a detailed list of issues that may be taken into account (see also, more specifically, para. 58 of the Guide).

114/ See the reports of the UNCITRAL Working Group on Electronic Commerce at its thirty-first and thirty-second sessions, A/CN.9/437; A/CN.9/446.

115/ See document A/CN.9/437, para. 22.

116/ For a full discussion of these matters, see Boss and Ritter, Electronic Data Interchange Agreements, pp. 72-78.

110. The European Model EDI Agreement, in dealing with the security of EDI messages, provides as follows:

> "Security procedures and measures include the verification of origin, the verification of integrity, the non-repudiation of origin and receipt and the confidentiality of EDI messages.
>
> Security procedures and measures for the verification of origin and the verification of integrity, in order to identify the sender of any EDI message and to ascertain that any EDI message received is complete and has not been corrupted, are mandatory for any EDI message. Where required additional security procedures and measures may be expressly specified in the Technical Annex." 117/

111. The ABA Agreement takes a different approach. It states that:

> "Each party shall adopt as its signature an electronic identification consisting of symbol(s) or code(s) which are to be affixed to or contained in each document transmitted by such party ('signatures'). Each party agrees that any signature of such party affixed to or contained in any transmitted document shall be sufficient to verify such party originated such document. Neither party shall disclose to any unauthorized person the signatures of the other party." 118/

112. Some model agreements also permit the parties to agree upon different levels of authentication to verify the completeness of the message. The Standard EDI Agreement of the United Kingdom, for example, states:

> "All messages must identify the sender and recipient(s) as provided in the User Manual and must include a means of verifying the completeness and authenticity of the message either through a technique used in the message itself or by some other means provided for in the adopted protocol.
>
> Parties may by Agreement also use higher levels of authentication to verify the completeness and authenticity of the message." 119/

113. It should be recalled, however, that the contractual provisions of interchange agreements are not effective in overcoming uncertainties and problems arising from mandatory legal requirements for signature or other forms of authentication.

117/ Article 6.2.

118/ Section 1.5.

119/ Section 4. Section 4 of the New Zealand Standard EDI Agreement contains identical provisions.

C. Requirement for an "original"

114. The requirement that certain information or documents be presented in an original form is regarded as creating an obstacle to the development of electronic commerce. Indeed, since the concepts of "writing", "signature" and "original" are closely interlinked, the requirement is often for a written, signed, original paper document. An original may be required in order to ensure the integrity of a document and that the information presented in a document has not been altered. In the context of documents of title and negotiable documents, such as bills of lading, where rights are attached to the physical possession of the document, it is essential to ensure that the original document is in the hands of the person claiming the title to the goods represented therein.

115. In an electronic environment the distinction between an original and a copy is an artificial one. "If a message is transmitted from one computer to another, the bit string which might be called the original, and the one which is the copy cannot be distinguished." 120/ What is essential in an electronic context is that a data message which has been created by a particular person has not been altered; in other words, it is essential to establish the integrity and authenticity of the data message. Various techniques are now available (such as digital signature technique) to confirm the integrity and authenticity of a data message.

116. To overcome the uncertainties arising from the requirement for an original under national laws, the UNCITRAL Model Law specifically addresses the subject. Article 8 provides:

> "(1) where the law requires information to be presented or retained in its original form, that requirement is met by a data message if:
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> (a) there exists a reliable assurance as to the integrity of the information from the time when it was first generated in its final form, as a data message or otherwise; and
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> (b) where it is required that information be presented, that information is capable of being displayed to the person to whom it is to be presented."

117. Similar to the approach adopted in relation to the requirements of "writing" and "signature", article 8 (1) sets out the minimum acceptable form requirements to be met by a data message for it to be regarded as the functional equivalent of an original. Paragraph 3 goes on to set out the criteria for assessing the integrity and reliability of a data message. It provides:

120/ TEDIS, Phase II, "Report on Authentication, Storage and Use of Codes in EDI Messages", vol. 1, 1995, p. 10.

"(3) For the purposes of subparagraph (a) of paragraph (1):

(a) the criteria for assessing integrity shall be whether the information has remained complete and unaltered, apart from the addition of any endorsement and any change which arises in the normal course of communication, storage and display; and

(b) the standard of reliability required shall be assessed in the light of the purpose for which the information was generated and in the light of all the relevant circumstances."

118. "Article 8 emphasizes the importance of the integrity of the information for its originality and sets out criteria to be taken into account when assessing integrity by reference to systematic recording of the information, assurance that the information was recorded without lacunae and protection of data against alteration. It links the concept of originality to a method of authentication and puts the focus on the method of authentication to be followed in order to meet the requirement. It is based on the following elements: a simple criterion as to 'integrity' of the data; a description of the elements to be taken into account in assessing the integrity; and an element of flexibility, i.e., a reference to circumstances". 121/ Thus, according to paragraph 3 (a), the necessary additions to a data message, such as endorsement and notarization, do not affect the originality of the data message, as long as the information contained in the message remains complete and unaltered.

119. Like articles 6 and 7, article 8 permits enacting States to exclude certain situations from its application. It is emphasized, however, that this approach, which is adopted in order to promote wider acceptability of the Model Law, should not be used to establish blanket exceptions, frustrating the objectives of the Model Law. Since articles 6 to 8 (provisions dealing with "writing", "signature" and "original") include certain fundamental principles which require general application, the existence of numerous exclusions from their scope would create obstacles to the development of electronic commerce. 122/

120. Some model interchange agreements specifically address the issue of originality of data messages. For example, under the ABA Model Agreement any document properly transmitted pursuant to the Agreement "when containing, or to which there is affixed a signature ('signed document') shall be deemed for all purposes (a) to have been signed and (b) to constitute an 'original' when printed from electronic files or records established and maintained in the normal course of business". 123/

121/ See Guide to Enactment of the Model Law, para. 65.

122/ Ibid., para. 69.

123/ Article 3.3.2.

D. Evidential value of data messages

121. The issue of the admissibility and evidential weight of electronic messages in judicial and administrative proceedings plays a central role in the development of electronic commerce. While the rules governing the admissibility of evidence in certain jurisdictions are rather flexible, there are legal systems which adopt a relatively strict approach to the subject and exclude electronic messages as acceptable evidence. The studies on legal rules for admissibility of evidence, carried out by the Commission of the European Communities in the context of the TEDIS programme, 124/ generally concluded that requirements relating to evidence were a potential obstacle to the development of EDI. The investigations carried out by the UNCITRAL secretariat came to the conclusion that, at a global level, there were fewer problems in the use of data stored in computers as evidence in litigation than might have been expected. 125/ The UNCITRAL Commission therefore recommended Governments:

> "To review the legal rules affecting the use of computer records as evidence in litigation in order to eliminate unnecessary obstacles to their admission, to be assured that the rules are consistent with developments in technology, and to provide appropriate means for a court to evaluate the credibility of the data contained in these records." 126/

122. Some countries have revised or are in the process of revising domestic legislation to allow the admission of electronic-based evidence. 127/ To provide guidance to States in removing obstacles to the use of electronic-based evidence, the UNCITRAL Model Law lays down provisions addressing both the admissibility and the evidential value of data messages in legal proceedings. Article 9 provides as follows:

> "(1) In any legal proceedings, nothing in the application of the rules of evidence shall apply so as to deny the admissibility of a data message in evidence:

124/ See "The Legal Position of the Member States with respect to Electronic Data Interchange", TEDIS, September 1989, pp. 277, 283-288; "The Legal Position in the EFTA Member States regarding Trade Electronic Data Interchange", TEDIS, July 1991, reprinted 1993, pp. 98-102.

125/ See document "Legal Value of Computer Records", A/CN.9/265, February 1985. For further discussion on the subject see the following UNCITRAL reports: A/CN.9/333, paras. 29-41; A/CN.9/350, paras. 79-83; A/CN.9/WG.IV/WP.53, paras. 46-55; A/CN.9/WG.IV/WP.55, paras. 71-81; A/CN.9/360, paras. 44-59.

126/ Official Records of the General Assembly, Fortieth Session, Supplement No. 17 (A/40/17), para. 360.

127/ See TEDIS studies (in footnote 124); see also UNCITRAL report A/CN.9/360, paras. 44-50.

(a) on the sole ground that it is a data message; or,

(b) if it is the best evidence that the person adducing it could reasonably be expected to obtain, on the grounds that it is not in its original form.

(2) Information in the form of a data message shall be given due evidential weight. In assessing the evidential weight of a data message, regard shall be had to the reliability of the manner in which the data message was generated, stored or communicated, to the reliability of the manner in which the integrity of the information was maintained, to the manner in which its originator was identified, and to any other relevant factor."

123. Paragraph (1) clearly states data messages should not be denied admissibility on the sole ground that they are in electronic form. The reference to the best evidence rule (which requires that only the original documents be presented as evidence) is considered necessary for certain common law jurisdictions. As stated in the Guide to the Enactment of the Model Law, "the notion of 'best evidence' could raise a great deal of uncertainty in legal systems in which such a rule is unknown. States in which the term would be regarded as meaningless and potentially misleading may wish to enact the Model Law without reference to the 'best evidence' rule contained in paragraph (1)". 128/

124. Paragraph (2) establishes the principle that due evidential weight must be given to information presented in the form of a data message. It sets out certain criteria to be applied in assessing the evidential weight of a data message, including the reliability and credibility of the method by which the data message was generated, stored, communicated or maintained, as well as the method of identification of the originator and any other relevant factors.

125. The issue of the admissibility of EDI messages is usually addressed by the parties in their interchange agreement. Model interchange agreements adopt varying approaches to the questions. They often provide that the parties accept electronic messages as evidence, or that they agree not to contest the admissibility of electronic evidence, or to give the same evidential value to electronic evidence. Some model interchange agreements address specific domestic rules of evidence. For example, the ABA Model Agreement addresses the "hearsay evidence rule" and the "best evidence rule" found in some common law jurisdictions which may constitute obstacles to the admissibility of electronic evidence. It provides that:

"Neither party shall contest the admissibility of copies of Signed Documents under either the business records exception to the hearsay rule or the best evidence rule on the basis that the Signed Documents were not originated or maintained in documentary form." (Section 3.3.4)

126. It must be noted, however, that the validity of contractual agreements between parties to an interchange agreement on the admissibility of electronic

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128/ Para. 70.

evidence will depend on the nature of the rules of evidence in a particular jurisdiction. To the extent that provisions regarding evidence are mandatory, contractual arrangements will not be effective. Again, such contractual provisions cannot be relied upon in litigation involving third parties that are not privy to the agreement. Similarly, contractual provisions will not be effective where there is a legal requirement for a written document for tax, accounting or other regulatory purposes, unless there is special permission by the public authorities regarding the use of electronic records.

127. The European Model EDI Agreement and the ECE Model Interchange Agreement clearly acknowledge the limit of the parties' agreement to the extent permitted by national law. The former states:

> "To the extent permitted by any national law which may apply, the parties thereby agree that in the event of dispute, the records of EDI messages which they have maintained in accordance with the terms and conditions of this Agreement, shall be admissible before the Courts and shall constitute evidence of the facts contained therein unless evidence to the contrary is adduced." 129/

E. Storage of data messages

128. The requirements for storage of certain documents or information in paper form for accounting, tax, audit, evidence and other legal or administrative purposes constitute barriers to the development of electronic trading. The UNCITRAL Model Law provides legislative guidance for removing such barriers by ensuring that the keeping of electronic records is given the same status as the keeping of paper records. Article 10 therefore provides that:

> "(1) where the law requires that certain documents, records or information be retained, that requirement is met by retaining data messages, provided that the following conditions are satisfied:
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> (a) the information contained therein is accessible so as to be usable for subsequent reference; and
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> (b) the data message is retained in the format in which it was generated, sent or received, or in a format which can be demonstrated to represent accurately the information generated, sent or received; and
>
> (c) such information, if any, is retained as enables the identification of the origin and destination of a data message and the date and time when it was sent or received."

129. The above paragraph lays down the conditions which data messages should meet in order to satisfy requirements for storage of information that might

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129/ Article 4; see also section 4.2 of the ECE Model Interchange Agreement for the International Commercial Use of EDI. For a discussion on treatment of the issue of admissibility and evidential nature of electronic evidence in interchange agreements, see Boss and Ritter, op. cit., pp. 98-101.

exist under national laws. Subparagraph (a) sets the same requirements as in the case of "writing", namely that information contained in data messages must be accessible and usable for subsequent reference. 130/ Subparagraph (b) provides that a data message must be retained either in the same format as it was generated, sent or received, or in any other format so long as it accurately reflects the information as it was generated, sent or received. It does not require that data messages be stored unaltered since data messages are usually decoded, compressed or converted in order to be stored. 131/ Subparagraph (c) aims at covering all the information which may be stored in addition to the data message itself, namely certain transmittal information necessary for the identification of the message in terms of its origin, destination and the date and time it was sent or received. Thus, there is no obligation to store those elements of transmittal information which have no relevance to the data message and "the sole purpose of which is to enable the message to be sent or received". 132/

130. Article 10 (3) provides that the services of an intermediary or any other third party may be used in meeting the obligations set out in paragraph (1), provided that the conditions imposed by subparagraphs (a), (b) and (c) are met.

131. Most interchange agreements address the question of recording and storage of EDI messages. Article 8 of the European Model EDI Agreement provides that:

> "8.1. A complete and chronological record of all EDI messages exchanged by the parties in the course of a trade transaction shall be stored by each party, unaltered and securely, in accordance with the time limits and specifications prescribed by the legislative requirements of its own national law, and, in any event, for a minimum of three years following the completion of the transaction.
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> "8.2. Unless otherwise provided by national laws, EDI messages shall be stored by the sender in the transmitted format and by the receiver in the format in which they are received.
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> "8.3. Parties shall ensure that electronic or computer records of the EDI messages shall be readily accessible, are capable of being reproduced in a human readable form and of being printed, if required. Any operational equipment required in this connection shall be maintained." 133/

132. Some model agreements, following article 10 (e) of the UNCID Rules, go further by requiring the parties to ensure that the person responsible for the

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130/ See paras. 95-97 of this report.

131/ See Guide to Enactment of the Model Law, para. 73.

132/ See article 10 (2).

133/ See also section 2.6 of the ECE Model Interchange Agreement.

data processing system or a third party certifies the correctness of the trade data log and of its reproduction. 134/ The Norsk EDIPRO Interchange Agreement (version 3.0) requires that the parties must take precautions to ensure that EDI messages are stored in such a way that they can later be printed out on paper. 135/

F. Documents of title/negotiability

133. The most challenging aspect of the implementation of electronic transport documents is the replacement of negotiable documents of title, such as bills of lading, by an electronic equivalent. To appreciate the complexity of the subject, it may be useful to describe briefly the functions performed by a traditional paper bill of lading.

134. The United Nations Convention on the Carriage of Goods by Sea, 1978 (Hamburg Rules) defines a bill of lading as "a document which evidences a contract of carriage by sea and the taking over or loading of the goods by the carrier, and by which the carrier undertakes to deliver the goods against surrender of the document. A provision in the document that the goods are to be delivered to the order of a named person, or to order, or to bearer, constitutes such an undertaking". 136/ Thus, a traditional bill of lading serves three main functions. First, it is a receipt issued by a carrier for the goods received from the shipper for shipment. It normally contains statements as to the description of the goods, their quantity, apparent order and conditions, as well as a promise to deliver the goods to the consignee at the port of destination. Second, a bill of lading is evidence of the contract of carriage between the parties. It does not constitute a contract of carriage since the contract is entered into before the bill of lading is signed. Third, the unique feature of a bill of lading is that it is a document of title and its possession, as a rule, is equivalent to possession of the goods it represents. As a document of title, the bill of lading enables the holder to claim delivery of the goods at the port of destination, and during transit it confers on the holder an exclusive right of control over the goods.

135. Thus the bill of lading is considered a symbol or substitute for the cargo in the sense that one can buy and sell the document with the same effect as if it had been the cargo, and the possession of an original bill of lading has an effect similar to that of the physical possession of the cargo itself. As to the right of control over the goods in transit, the person in possession of a full set of originals (bills of lading are usually issued in a set of three originals) has an exclusive right over the goods in transit and can interfere with the actual performance of the carriage and thus control the

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134/ See section 7.5 of the Standard EDI Agreements of the United Kingdom and New Zealand.

135/ Section 13.

136/ Article 1 (7).

destiny of the cargo in transit. 137/ It is this document of title function of the bill of lading which makes it a key element in international trade. It enables the parties to trade with the goods while in transit by using the document as a substitute, the buyer having the assurance that he can secure actual possession of the goods at the destination by presenting an original bill of lading, or that he can resell the goods by transferring the same bill of lading to a sub-buyer. The term "negotiable" used in relation to a bill of lading merely relates to its transferability, and the fact that transfer of rights in goods can be achieved by transfer of the bill of lading.

136. The relationship between the carrier, shipper and consignee of bills of lading is governed by mandatory application of international conventions, such as the Hague Rules, the Hague-Visby Rules or the Hamburg Rules or their national enactments. These international conventions do not contain specific provisions requiring a written paper document for a bill of lading, but references to "writing", "document" and the obligation imposed on the carrier to issue a bill of lading at the request of the shipper are clearly made with a traditional paper document in mind. The Hamburg Rules, however, permit the signature on the bill of lading to be in any mechanical or electronic form, provided that it is not inconsistent with the law of the country where the bill of lading is issued. 138/

137. Negotiable bills of lading have been indispensable to the financing and conduct of international trade, making possible the sale and transportation of goods between parties located in distant parts of the world. Modern technological developments, however, have resulted in the arrival of the ship at the port of destination before the arrival of the bills of lading to enable delivery of the goods. The problems caused by the late arrival of the bill of lading, including the cost and risk involved in releasing the goods against presentation of the letter of indemnity instead of an original bill of lading, have made the international community call for the use of non-negotiable transport documents such as sea waybills where goods are not traded in during transit. 139/ It has been argued that "instruments such as negotiable bills of lading are outmoded and should be discarded as business moves to EDI. Indeed, there may come a time, when commerce is so secure, trustworthy and universal that businesses feel comfortable in discarding negotiable transfers.

137/ See Kurt Grönfors, "Document replacement", paper delivered at the UNCTAD/SIDA Seminar on Ocean Transportation Documentation and Its Simplification, Alexandria, 1979, p. 123.

138/ Article 14 (3).

139/ See ECE Recommendation No. 12 on "Measures to Facilitate Maritime Transport Documents Procedures", adopted by the WP.4, 1979, TRADE/WP.4/INF.61; and Recommendation No. 12/Rev.1, 1993, TRADE/WP.4/INF.123 (Edition 96.1).

But that day is not yet here, and there are significant numbers of transactions requiring negotiable transfers. Some accommodation must be made for them, if EDI is to truly satisfy the needs of commerce". 140/

138. The challenge, therefore, is the replacement of negotiable documents with all the legal effects attached to the piece of paper. 141/ Under the existing national and international laws governing negotiable bills of lading legal rights are attached to the physical possession of the paper document. There is therefore a need for a legal regime to allow the parties to transfer legal rights in goods, such as ownership rights, through the exchange of electronic data messages.

139. To achieve negotiability in an electronic environment, in addition to overcoming the general problems of writing, signature etc., questions such as the allocation of liabilities, incorporation of general terms and conditions of contract, and confidentiality need to be resolved. 142/

140. Efforts are currently focused on developing legal and technological means for replicating the negotiability and transferability function of a paper bill of lading in an electronic environment. The UNCITRAL Model Law, the CMI Rules for Electronic Bills of Lading and the Bolero Project aim at achieving electronic negotiability within the framework of the existing substantive law governing the paper bill of lading. It has, however, been suggested that if a system, based on transfer of rights, is developed with the purpose of replacing the paper bill of lading, it will need legal rules of its own. If such a system becomes successful, the bill of lading will gradually disappear and the bill of lading law will fade away. 143/

140/ George F. Chandler, III, "Maritime electronic commerce for the twenty-first century", paper presented at the CMI Centenary Conference, Antwerp, June 1997, p. 12.

141/ One solution proposed is the use of non-negotiable documents. "An electronic message cannot carry the legal characteristic of 'negotiability' currently linked with physical possession of a paper document. Consequently, any development in the use of a document from which the function of negotiability is removed will facilitate a change from paper data interchange to EDI" (see ECE Recommendation No. 12, background document ECE/TRADE/200, para. 26).

142/ See UNCITRAL report A/CN.9/WG.IV/WP.69, 31 January 1996, paras. 53-65.

143/ See G.J. Van der Ziel, "Main legal issues related to the implementation of the electronic transport documentation", paper delivered at the CMI Centenary Conference, Antwerp, June 1997, p. 4. The author doubts whether an electronic bill of lading can exist. In his view "an electronic bill of lading is something quite different: it is the label, the marketing name for ... the series of interrelated EDI messages which together, taken as a whole, may have the same function as a paper bill of lading. Whether or not these EDI messages will have the same function will depend, i.a., on whether the legal issues involved are adequately dealt with" (p. 1).

141. Part two of the UNCITRAL Model Law, which deals with electronic commerce in specific areas, devotes its existing chapter to the subject of carriage of goods and transport documents. In preparing the Model Law, it was recognized that "the carriage of goods was the context in which electronic communications were most likely to be used and in which a legal framework facilitating the use of such communications was most urgently needed". 144/ Chapter I, in dealing with transport documents, presupposes that general provisions of the Model Law, particularly those relating to "writing, original and signature", also apply to the electronic equivalent of transport documents.

142. Article 16 sets out the range of activities to which provisions of the chapter are to apply. It includes a non-exhaustive list of actions expected to be carried out in the context of carriage of goods, such as furnishing marks, number, quantity or conditions of goods, confirmation of loading, notification of terms and conditions of contract, claiming delivery, notice of loss of, or damage to, goods, undertaking to deliver goods to the person entitled to take delivery, granting, acquiring or transferring and negotiating rights in goods, and transferring rights and obligations under the contract.

143. Although the activities referred to in article 16 are directly relevant in the context of maritime transport, they could also be performed in relation to other modes of transport. The intention, therefore, is to cover all transport modes, including road, rail, air, sea and multimodal transport, as well as all transport documents, whether negotiable or non-negotiable. 145/

144. Paragraphs (1) and (2) of article 17 specifically establish functional equivalents of information, as well as the performance of the actions listed in article 16 through the use of paper documents. Paragraph (1) provides that:

> "Subject to paragraph (3), where the law requires that any action referred to in article 16 be carried out in writing or by using a paper document, that requirement is met if the action is carried out by using one or more data messages."

145. According to paragraph (2), this provision applies whether the requirement for a written document is in the form of an obligation or whether the law provides certain consequences for failing to conduct the action in writing or to use a paper document.

146. Paragraphs (1) and (2) "are intended to replace both the requirement for a written contract of carriage and the requirements for endorsement and transfer of possession of a bill of lading". 146/ Such provisions were considered necessary in view of the difficulties that might exist, in certain

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144/ Guide to Enactment of the Model Law, para. 110.

145/ Ibid., paras. 110-122.

146/ Ibid., para. 113.

countries, with regard to recognizing the transmission of data messages as functionally equivalent to the physical transfer of a document of title representing the goods. 147/

147. To enable the transfer of rights and obligations through the use of data messages, the crucial issue is to establish the identity of the exclusive holder to whom the rights or obligations are to be transferred - in other words, to ensure that a right is transferred to one person only. Paragraph (3) of article 17 therefore provides that:

> "If a right is to be granted, or an obligation is to be acquired by, one person and no other person, and if the law requires that, in order to effect this, the right or obligation must be conveyed to that person by the transfer, or use of, a paper document, that requirement is met if the right or obligation is conveyed by using one or more data messages, provided that a reliable method is used to render such data message or messages unique."

148. According to paragraph (4), the standard of reliability required is to be assessed in the light of the purpose for which the right or obligation was conveyed in the light of all the relevant circumstances.

149. Paragraphs (3) and (4) aim at ensuring that a right or obligation is transferred to one person only. They introduce a requirement referred to as the "guarantee of singularity", or uniqueness of the message. Since the requirement in the proviso to paragraph (3) regarding the use of a reliable method to render a data message or messages "unique" is ambiguous, it may be subject to varying interpretations. The Guide to Enactment of the Model Law attempts to clarify the subject by stating that the words "should be interpreted as referring to the use of a reliable method to secure that data messages purporting to convey any right or obligation of a person might not be used by, or on behalf of, that person inconsistently with any other data messages by which the right or obligation was conveyed by or on behalf of that person". 148/

150. There are also provisions to avoid duplication by ensuring that transfer of rights and obligations or title to goods is not conducted through the use of both data messages and paper documents simultaneously. In other words, where data messages are used to effect any such action, no paper document used for the same purpose is valid unless the use of data messages has been terminated and replaced by the use of paper documents. 149/

151. Furthermore, article 17 contains provisions to ensure that compulsory application of certain laws to contracts of carriage of goods which is in,

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147/ Ibid.

148/ Ibid., para. 117.

149/ See article 17 (5).

or is evidenced by, a paper document, such as the Hague, Hague-Visby or Hamburg Rules, is not excluded by the fact that data messages are used instead of a paper document. 150/

152. Systems and rules have been developed, or are in the process of being developed, to assist in the practical implementation of negotiable electronic transport documents such as bills of lading. The CMI Rules for Electronic Bills of Lading (1990) provide a contractual basis for the implementation of electronic bills of lading. 151/ The Bolero Project is to provide an electronic central registry system enabling transfer of title and ownership between users. 152/

153. In the absence of a paper document a registry system would play an essential role in the negotiation process. "Any form of transferability or negotiability under electronic commerce will require some form of a registry - that is an 'honest' middleman or a party that is otherwise responsible to deliver property. Someone has to hold the 'stake', record the transaction, and maintain the integrity of the transaction, or there would be chaos, because no one is responsible to see that the transaction is completed." 153/

154. It is now to be seen whether the Bolero system will provide a sufficiently secure mechanism for electronic negotiability.

G. Allocation of liability

155. Allocation of risk and liability arising in connection with the use of EDI, as well as the limitation of liability, is addressed in some interchange agreements. Questions such as liability for breach of obligations imposed by interchange agreements, communication failure, system breakdown, error in communication, liability of third-party service provider, exclusion from liability for indirect or consequential damages, and cases of *force majeure* are covered to a varying degree by some interchange agreements. There are, however, interchange agreements which do not address the question of liability, such as the Standard Interchange Agreement ("I.A.") of the United Kingdom. The commentary to the Agreement states that:

> "No special clause appears in the I.A. about attribution of liability for breach of its terms, nor about any limitation of liability. It assumes that, in the event of any damage arising directly from a breach, the liability will 'lie where it falls'. It was not considered necessary when drafting the I.A. to seek to limit one party's liability to the detriment of another's. There could, of course, be consequential damage which might flow indirectly from breach of the I.A.'s terms (e.g. breach of confidentiality). It is likely, however, that such

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150/ See para. (6).

151/ For a discussion of this issue, see paras. 38-46 of this report.

152/ For further information, see paras. 47-59 of this report.

153/ See Chandler, op. cit., p. 16.

damages would arise in tort or from breach of the underlying contract between the parties and any remedy would be sought accordingly, not through the I.A.". 154/

156. Similarly, the Guidelines for Interchange Agreements prepared by the Organization for Data Exchange by Tele Transmission in Europe (ODETTE) does not include any substantive provision on liability. It provides that "all questions of liability specific to the use of EDI through ODETTE, both between the parties and in relation to any third party, shall be decided by reference to any relevant contract for the underlying trade transaction".

157. Some interchange agreements, however, include provisions making the parties liable for any loss or damage directly caused by their failure to perform their obligations under the Agreement, subject to certain exclusions. Article 11 of the European Model EDI Agreement states:

"11.1 No party to this Agreement shall be liable for any loss or damage suffered by the other party caused by any delay or failure to perform in accordance with the provisions of this Agreement, where such delay or failure is caused by an impediment beyond the party's control and which could not reasonably be expected to be taken into account at the time of conclusion of the Agreement or the consequences of which could not be avoided or overcome."

158. The parties are usually held liable for any loss or damage directly arising from the act or omission of an intermediary engaged to perform certain services. Article 11 of the European Model EDI Agreement, for example, provides:

"11.3 If a party engages any intermediary to perform such services as the transmission, logging or processing of an EDI message, that party shall be liable for damage arising directly from that intermediary's acts, failures or omissions in the provision of said services.

11.9 If a party requires another party to use the services of an intermediary to perform the transmission, logging or processing of an EDI message, the party who required such use shall be liable to the other party for damage arising directly from that intermediary's acts, failures or omissions in the provision of the said services." 155/

159. Some interchange agreements impose an obligation on the sender to ensure the completeness and accuracy of data messages sent. The sender is not, however, held liable for the consequences of an incomplete or incorrect transmission if the error is reasonably obvious to the recipient, in which

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154/ See also the New Zealand Standard EDI Agreement and the Explanatory Notes, which also adopt the same approach.

155/ See section 6 of the ECE Model Interchange Agreement, which includes provisions similar to that one or to article 11 of the European Model EDI Agreement.

case the recipient must immediately inform the sender. 156/ Other agreements impose an obligation on the receiving party to notify the sender if any transmitted message is received in an unintelligible or garbled form, provided that the sender can be identified from the received transmission. 157/

160. An earlier draft of the UNCITRAL Model Law contained a provision on liability, under which the parties were held liable for direct damages arising from failure to observe the provisions of the Model Law except where the loss or damage was caused by circumstances beyond their control. 158/ This provision was later deleted, as it was considered by the Working Group that the Model Law did not introduce duties additional to those existing under the applicable law and the contractual agreements of the parties. Although it was agreed that the issues of liability and allocation of risk in electronic communications would need to be reconsidered in the context of future work, it was considered premature to engage in a general debate on those issues in the context of the Model Law. 159/

161. The preparation of statutory model provisions covering all aspects of liability in relation to the use of electronic means of communication, including liability of the parties and of service providers, and the position of innocent third parties, would create legal certainty and assist the development of electronic commerce. As noted earlier, contractual provisions on allocation of liability are only effective as between the parties. Furthermore, the enforceability of certain contractual rules, for example very wide exclusion clauses, may be limited by the applicable national law. There is a need for a set of uniform rules which would clearly set out the liability of the parties, as well as that of service providers and intermediaries, and protect the interests of innocent third parties. Such provisions would be indispensable in the context of the implementation of negotiable electronic transport documents.

H. Validity and formation of contracts

162. As a general rule, in most jurisdictions, a contract is formed when the parties reach an agreement on its terms, unless specific formalities such as document or signature are required by law. Thus, a contract concluded orally

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156/ See section 5.3 of the United Kingdom and New Zealand Standard EDI Agreements.

157/ See section 5.2.4 of the ABA Model Agreement.

158/ See document A/CN.9/387, paras. 169-176.

159/ See document A/CN.9/406, November 1994, para. 74.

is valid in most legal systems. 160/ It follows, therefore, that a contract concluded by an electronic means of communication should, in principle, be valid.

163. However, a number of questions and uncertainties arise in the context of the use of electronic communication techniques for concluding a contract. Questions arise as to the validity of such contracts, especially where there are legal requirements for writing, signature etc., the time and place of formation of such contracts, the proof of the terms of the contract in case of dispute, and so on. The time when the contract is formed is important in determining the passing of property and transfer of risk of loss or damage in case of sale of goods. The place where the contract is concluded may determine which national law is to govern the contract in the absence of an effective choice of legal provision as well as the establishing jurisdiction in case of litigation.

164. The study on the legal position of Member States with respect to EDI, published by the Commission of the European Communities under the TEDIS programme, showed that "a contract or other transaction can be concluded by electronic means wherever writing 'ad solemnitatem' is not required". It further concluded that the "issue on which solutions have varied most between the Community Member States and between areas of law is unquestionably that of determination of the time and place at which transactions effected by electronic data interchange are made". 161/ Similarly, the study of the legal position in the States belonging to the European Free Trade Association (EFTA) identified the difficulties associated with the determination of the time and place of conclusion of operations performed by EDI as an obstacle to the development of EDI, but unlike the situation in EU Member States, the solutions provided by the laws of the EFTA States all followed the theory of receipt, according to which the contract is concluded at the time and place where the offerer receives the acceptance of the offer. 162/

165. Although the parties to a contract are free to agree on the rules as to the conclusion of their contracts, national laws on the subject apply if the parties fail to make specific provisions concerning certain issues. To promote increased certainty and uniformity with regard to the conclusion of

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160/ Article 11 of the United Nations Convention on Contracts for the International Sale of Goods, 1980, provides as follows: "A contract of sale need not be concluded in or evidenced by writing and is not subject to any other requirement as to form. It may be proved by any means, including witnesses". See also articles 12 and 96 of the Convention, which permit contracting States to enter reservations in this respect.

161/ P. 291.

162/ See p. 105. Another solution commonly adopted in legal systems is the dispatch rule, according to which the contract is concluded at the time and place where the acceptance of the offer is sent by the offeree to the offerer. For discussion on contract formation in the context of EDI, see UNCITRAL reports A/CN.9/333, paras. 60-75; A/CN.9/350, paras. 93-108; A/CN.9/360, paras. 76-95; and A/CN.9/WG.IV/WP.55, paras. 96-113.

contracts through the use of electronic means, the UNCITRAL Model Law includes specific provisions on formation and validity of such contracts. Article 11 (1) provides that:

> "In the context of contract formation, unless otherwise agreed by the parties, an offer and the acceptance of an offer may be expressed by means of data messages. Where a data message is used in the formation of a contract, that contract shall not be denied validity or enforceability on the sole ground that a data message was used for that purpose."

166. This provision was considered necessary in order to remove any uncertainty which might exist in some countries as to the validity of contracts concluded by electronic means. It deals, in addition, with the form in which an offer or acceptance may be expressed. Although legal validity and effectiveness of data messages are established by other articles of the Model Law, specific provisions in the context of contract formation were considered necessary. According to the Guide to Enactment of the Model Law, "the fact that electronic messages may have legal value as evidence and produce a number of effects ... does not necessarily mean that they can be used for the purpose of concluding valid contracts". 163/

167. Article 11, however, does not impose the use of electronic means of communication on the parties. The use of the term "unless otherwise agreed by the parties" in paragraph (1) clearly recognizes the parties' freedom of contract. Similarly, article 11 is not intended to overrule national laws prescribing formalities for certain contracts, such as notarization or other requirements for "writing" for public policy reasons. Paragraph (2) therefore permits enacting States to exclude the application of paragraph (1) in certain specified cases.

168. The Model Law does not include specific provisions as to the time and place of contracts formed through electronic means. An earlier draft of article 11, however, contained such a provision, 164/ but was deleted on the ground that it would interfere with national law applicable to contract formation. "It was felt that such provision might exceed the aim of the Model Law, which should be limited to providing that electronic communications would achieve the same degree of legal certainty as paper-based communications." 165/ It was nevertheless considered that the provisions of article 11 together with those of article 15, which deals with the time and place of dispatch and receipt of data messages, are designed to remove uncertainty as to the time and place of formation of contracts where the offer or the acceptance is expressed electronically. 166/

163/ Para. 77.

164/ See document A/CN.9/406, paras. 34 and 40-41.

165/ Guide to Enactment of the Model Law, para. 78; document A/CN.9/406, paras. 40-41.

166/ Guide to Enactment of the Model Law, para. 78.

169. While some model interchange agreements do not include provisions on the subject of contract formation, 167/ others specifically address the topic. Provisions are frequently included expressing the intention of the parties to enter into binding obligations by exchange of electronic messages. The ABA Model Interchange Agreement states:

> "This Agreement has been executed by the parties to evidence their mutual intent to create binding purchase and sale obligations pursuant to the electronic transmission and receipt of documents specifying certain of the applicable terms." 168/

170. The European Model EDI Agreement defines the time and place of the formation of the contract by stating that:

> "A contract effected by the use of EDI shall be concluded at the time and place where the EDI message constituting acceptance of an offer reaches the computer system of the offerer." 169/

171. The official commentary to the Model Agreement explains that in determining the time and place of contracts concluded where parties are not in the presence of each other, a majority of Member States approve the application of the "reception rule", which is also in line with the provisions of the United Nations Convention on the International Sale of Goods. Furthermore, the "conclusion of a study carried out in the first phase of the TEDIS programme supports the view that this rule is the best to apply to EDI contracts; in particular as it avoids, to a large extent, the risk of conflicts of laws in connection with the use of EDI. These elements justify the endorsement of that rule in the EDI Agreement".

I. Incorporation of general terms and conditions

172. A further question which arises in the context of electronic communication is the incorporation of general terms and conditions of underlying contracts generally found on the reverse side of paper documents, such as bills of lading and other standard form contracts. Since in the electronic environment no reverse side of the document exists, the achievement of an acceptable solution becomes crucial for the development of electronic commerce.

173. Various solutions to the problem have been proposed, including the incorporation of the general terms and conditions of the underlying

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167/ See the Standard Model EDI Agreements of the United Kingdom and New Zealand.

168/ Section 3.3.1.

169/ Article 3.3. See also the ECE Model Interchange Agreement, which only deals with the time when the contract is formed. Section 4.3 provides as follows: "A contract concluded through the use of EDI under this Agreement shall be deemed to be formed when the message sent as acceptance of an offer has been received in accordance with section 3.1".

transaction in a communication agreement between the trading parties, 170/ or in a separate supply or master agreement under which the transaction is structured. 171/

174. While some interchange agreements address the subject, 172/ others seem to omit any relevant provision, on the grounds that "the interchange agreement should apply solely to the electronic exchange of messages and should not deal with the underlying commercial or contractual obligations of the parties". 173/

175. The subject of incorporation by reference was discussed within UNCITRAL on several occasions during preparation of the Model Law. It was generally agreed that there was a need to address the subject in the context of electronic commerce. It had been proposed that any attempt to establish legal norms for such incorporation clauses should meet certain conditions, namely that a reference clause should be inserted in the data message and the general terms and conditions must be actually known and accepted by the party against whom they might be relied upon. 174/ Furthermore, it was stated that in view of the complexity of the issues involved, devising rules for incorporation by reference in an electronic environment might be a difficult task, bearing in mind that not all related legal issues had been satisfactorily solved in a paper-based environment. 175/

176. The UNCITRAL Working Group on Electronic Commerce at its thirty-second session, after further deliberations, adopted the general principle of non-discrimination, i.e. that information should not be denied legal effect, validity or enforceability solely because it was incorporated by reference in the data message. It was considered that establishing certain requirements, such as clear indication of intention, identification or reasonable accessibility of the terms to be incorporated, could interfere with certain established practices or with mandatory rules of national law. 176/

J. Other legal issues related to communication

177. Interchange agreements address a number of other issues which have a legal impact on communication between the parties through EDI. They include

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170/ See UNCITRAL report A/CN.9/333, para. 67.

171/ See Boss and Ritter, op. cit., p. 107.

172/ See the ABA Model Interchange Agreement, section 3.1.

173/ Boss and Ritter, op. cit., p. 107.

174/ See UNCITRAL reports A/CN.9/421, para. 114, and A/CN.9/437, para. 152.

175/ See UNCITRAL report A/CN.9/437, paras. 154-155.

176/ See the report of the UNCITRAL Working Group on Electronic Commerce at its thirty-second session, A/CN.9/446, February 1998, pp. 14-24.

matters such as: (a) The acknowledgement or verification of receipt of messages merely to confirm that the transmitted data message was received by the addressee. This creates a presumption that a data message was received intact and without errors or omission. 177/ (b) Severability, to ensure that in the event of one or more of the provisions of the interchange agreement being considered invalid or unenforceable, the entire agreement is not set aside. (c) Applicable law and dispute resolution, determining the law governing EDI relationships and the choice of forum for resolving disputes arising from such relationships are important issues in international communications. Interchange agreements for international or regional use include specific provisions on the subjects, giving an option to the parties to choose between an arbitration clause and a jurisdiction clause. 178/

178. Chapter III of part one of the Model Law contains a set of provisions on communication of data messages normally found in interchange agreements. These provisions cover such issues as the formation and validity of contracts, recognition by parties of data messages, attribution of data messages, acknowledgement of receipt and time and place of dispatch and receipt of data messages. 179/ Article 4 of the Model Law, recognizing the principle of party autonomy in respect of such issues, permits the parties involved in electronic communication to vary, among themselves, the provisions of chapter III by agreement.

179. The provisions contained in chapter III of the Model Law provide useful guidance to the parties in preparing their communication agreements. Also, they can be applied in supplementing the terms of such agreements in cases of gaps or omissions in contractual stipulations. Moreover, they can provide the basic principles for situations where electronic communications take place in open networks, such as the Internet, and without a previous contractual agreement. 180/

CONCLUSIONS AND RECOMMENDATIONS

180. Electronic commerce is not restricted by national boundaries, and its adaptation requires attention by all those interested in international trade and development, including Governments, and private sector, relevant governmental and non-governmental organizations. As has been seen, 181/ efforts have been continuing at both national and international levels to create a legal and technical environment for accommodating electronic commerce. National Governments have been involved in enacting legislation

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177/ For a discussion on the subject, see Boss and Ritter, op. cit., pp. 48-63.

178/ See articles 12 and 13 of the European Model EDI Agreement; and the ECE Model Interchange Agreement, sections 7.1 and 7.7.

179/ See articles 11-15 of the Model Law.

180/ See Guide to the Enactment of the Model Law, para. 20.

181/ See chapter I.

and establishing a regulatory framework that would remove any uncertainty which might exist owing to the use of electronic means of communication in international trade. International organizations concerned with harmonization of international trade law and trade efficiency have been active in preparing model rules and guidelines, setting directions for future legislative reforms. Private sector organizations have been working towards establishing technical standards, infrastructures and required services. The objective of all these efforts is to create a favourable legal environment for electronic commerce.

181. Electronic commerce will not, however, fully develop unless traders have trust and confidence regarding such issues as the validity and enforceability of their transactions, the identity of their potential trading parties in open-network trading, the integrity of information, confidentiality, the reliability of transaction mechanisms, the right of recourse in case of error or negligence, and the impact of transaction on innocent third parties.

182. As stated earlier, contractual arrangements are not sufficient to overcome uncertainties arising from the use of electronic means of communication in international trade or communication in an open network such as the Internet. The investigations conducted within a number of organizations, such as the ECE, UNCITRAL and the Commission of the European Communities, have confirmed that the existing rules and legislation pertaining to trade transactions are not appropriate for an electronic commerce environment and are likely to create uncertainties as to their validity and enforceability. Furthermore, it is acknowledged that the full benefit of electronic commerce cannot be obtained without the existence of a suitable regulatory framework.

183. The Internet revolution and the rapid growth of electronic commerce will have a direct impact on traders both in developed and in developing countries. Inability to adapt to the new trading pattern of trade partners, due to the absence of the necessary legal and institutional framework or the lack of know-how, will hamper the development objectives of developing countries. It is suggested that developing countries, including least developed countries, give consideration to creating a favourable legal and institutional environment for electronic commerce.

184. As far as legislative reforms are concerned, it might be necessary to take stock of the existing rules and regulations pertaining to international trade issues, identifying the areas/legal requirements which might generate uncertainties in an electronic environment. It would then be possible to prepare the necessary modifications that would meet the requirements of electronic trading. To avoid the risk of creating a disunified legal regime, which would hamper rather than promote electronic commerce, it would be advisable to follow, to the extent possible, the existing international rules and standards, such as the UNCITRAL Model Law on Electronic Commerce. It would therefore be essential that developing countries be kept informed of the latest developments, in various international forums, affecting electronic commerce.

185. An area which might require specific legislative attention is the issue of electronic signatures such as digital signatures or other electronic authentication means. Open-network trading and high-value transactions would

undoubtedly require the use of a secure electronic signature technique such as digital signature. Although other technologies are emerging, digital signature technology is currently widely known and has been, or is currently, the subject of legislative attention in a number of countries.

186. To create trust and confidence in the use of such signatures, their legal validity and recognition need to be ensured. In the context of digital signatures it would also be necessary to establish the appropriate infrastructure as well as the relevant rules and regulations, including requirements for certification authorities, whether government licensing or accreditation of certification authorities is required, and liability rules. The ongoing work of UNCITRAL on preparation of uniform rules for electronic signatures, including digital signatures, will provide useful guidance in this respect.

187. A further area which would need to be considered on a priority basis is the question of education and awareness of those involved in international trade as regards the impact and increasing importance of electronic means of communication in trade transactions. It must be recognized that obstacles to the development of electronic commerce are not merely limited to the lack of legal or institutional framework, but also include the lack of willingness or ability on the part of traders to use electronic communication techniques. Thus, organization of educational programmes aimed at promoting awareness and knowledge among traders in developing countries would play a crucial role in the development of electronic commerce.